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ABSTRACT

The Performance-Based Teacher Education (PBTE) curriculum developed by the National Center for Research in Vocational Education has been widely adopted by colleges and universities training vocational education teachers. In order to determine whether PBTE works, two sites using PBTE--Temple University and the University of Central Florida--were studied in depth: results were verified through conducting telephone interviews and surveys covering seventy-one additional PBTE programs. Three levels of effects of PBTE were investigated: (1) effects on vocational teacher education programs; (2) effects on vocational teachers; and (3) effects on vocational education classroom and students, with the following results. It was found that PBTE has precipated significant changes in many vocational teacher education programs, helped university vocational education departments survive crises of declining enrollment, and made teacher education more productive. There is evidence that PBTE is having long-term impact on improving the caliber of vocational education teachers, especially in the areas of instructional planning, organizing instruction, student reinforcement, individualizing instruction, and student evaluation. PBTE also has contributed to vocational education classrooms by increasing the use of competency-based techniques with students, and improving the performance of local school administrators in evaluating teachers. Overall, respondents gave PBTE very high marks. The few negative comments mostly were criticism of performance-based education in general rather than of PBTE itself. (KC)

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DOES PERFORMANCE-BASED TEACHER EDUCATION WORK?

Case Studies of a Model Curriculum for Vocational Teacher Education

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- Generating knowledge through research
- Developing educational programs and products
- Evaluating individual program needs and outcomes
- Providing information for national planning and policy
- Installing educational programs and products
- Operating information systems and services
- Conducting leadership development and training programs

FOREWORD

A series of studies have been undertaken to explore the effects of research conducted by the National Center for Research in Vocational Education. We are interested in learning more about how our research efforts influence thinking and practice in vocational education.

Dr. Kay A. Adams, Coordinator of National Center Evaluation, was responsible for conceptualizing and initiating the studies. Thanks are extended to her staff, Dr. William Hull, Ms. Jean Anderson, Ms. Laura Modisette, and Ms. Brenda MacKay, for their involvement in conducting the studies. To enhance objectivity and credibility, external contractors were used as team members in conducting the evaluation studies. We appreciate the work of Dr. Michael Patton, Minnesota Center for Social Research, and Ms. Deborah G. Bonnet, New Educational Directions.

Thanks are extended to all the staff at the field sites who participated in these studies. A special note of appreciation is extended to each of the following: Dr. Richard A. Adamsky, Department of Vocational Education, Temple University; Dr. Glen E. Fardig, Department of Vocational Education, University of Central Florida; Ms. Bernie Griffith, Cashmere Public Schools; and Dr. Alice E. Kudlata, Milwaukee Public Schools.

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SUMMARY

Does Performance-Based Teacher Education Work?

The Performance-Based Teacher Education (PBTE*) curriculum developed by the National Center for Research in Vocational Education has been widely adopted by vocational teacher education programs. Many programs have been implemented using the National Center's 100 PBTE modules and support documents. But does PBTE work? To answer this question, two exemplary sites using PBTE, Temple University in Philadelphia, Pennsylvania and the University of Central Florida in Orlando, Florida, were studied in depth. These results were verified through conducting telephone interviews and surveys covering 71 additional PBTE programs.

Distribution

From March 1977 through January 1980, over 260,000 PBTE modules have been distributed, constituting over half a million dollars in sales. Over 1,350 different agencies and 250 individuals have purchased modules including approximately 990 education agencies and 140 international agencies. The primary purchasers have been colleges and universities, which represent 59 percent of the total dollar sales. Over 18 percent of all higher education institutions in the United States have purchased PBTE. All fifty states, five U.S. territories, eleven Canadian provinces, and twenty-four other foreign countries have purchased modules. Based on enrollment data from twenty-nine educational agencies, an average of sixty teachers are enrolled per PBTE program on a yearly basis. Since 990 educational agencies have purchased PBTE modules, a rough estimate of 59,000 vocational education teachers have used PBTE modules.

Use

Full-scale implementation, as well as creative adaptations of PBTE, are occurring at many agencies across the nation. Of the 990 educational agencies which have purchased PBTE modules, 360 are universities, 330 are secondary schools, 210 are postsecondary institutions, and 90 are state agencies. At colleges and universities, PBTE is used for preservice and inservice vocational teacher education programs. PBTE is being used to train teachers in agricultural education, business and office education, distributive education, health education, home economics education, industrial arts, technical education, and trade and industrial education. At secondary schools, PBTE modules are used for inservice programs for practicing teachers. At postsecondary institutions, there is an increasing use of the PBTE modules for staff development programs, most frequently as part of a comprehensive personnel evaluation and development system. In addition to education agencies,

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* The term PBTE will be used throughout this report to refer to the National Center's PBTE curriculum rather than to the general concept of performance-based teacher education.

over 220 noneducation agencies such as Caterpillar Tractor Company, IBM, and Union Carbide are using the PBTE modules, most frequently as part of company training programs for improving instructional techniques.

Effects

Three levels of effects of PBTE were investigated: (1) effects on vocational teacher education programs; (2) effects on vocational teachers; and (3) effects on vocational education classrooms and students.

Effects on Teacher Education Programs

Based on in-depth interviews with forty-five college and university administrators and faculty, it was found that PBTE has precipitated significant changes in many vocational teacher education programs. In a period of declining need for secondary teachers, the National Center's PBTE curricula has helped university vocational education departments *survive* crises of funding cutbacks and faculty retrenchment. Because PBTE lends itself to an individualized approach, universities can provide field-based programs to larger service areas. PBTE made it possible for universities to attract community support, receive state funds for PBTE program development, and maintain enrollment. PBTE has (1) increased students' *access* to vocational teacher certification by providing self-contained instruction especially useful in rural and isolated areas; (2) increased *flexibility* in getting help to new teachers immediately whenever they are hired; (3) increased *productivity* of teacher education programs at some institutions by shortening the time required to certify vocational teachers and lowering costs by using differentiated staffing; (4) reduced variability and increased *accountability* of vocational teacher education curricula through standardizing the skills vocational teachers are required to master; and, (5) significantly changed the role of the university teacher from a classroom lecturer to a *learning facilitator* working frequently with students on a one-to-one basis.

Effects on Teachers

Based on in-depth interviews with forty vocational education teachers and local school administrators, there is evidence that PBTE is having long-term impact on *improving the caliber of vocational education teachers* especially in the areas of instructional planning, organizing instruction, student reinforcement, individualizing instruction, and student evaluation. There is also evidence that PBTE increases teachers' ability to be self-evaluative and their confidence in themselves as teachers.

Effects on Classrooms and Students

PBTE also has contributed directly to vocational education classrooms. In an era of increased emphasis on basic skills and competencies, PBTE has *added impetus* to the movement toward competency-based instruction for all vocational education students. As one administrator noted, "If you're going to do competency-based instruction with students, you must get teachers committed first." PBTE has (1) increased the use of competency-based *techniques with students* because teachers teach the way they are taught, and (2) improved the performance of local school *administrators in evaluating teachers.*

Appraisal

In the course of interviews with program staff, teacher educators, teachers, and local administrators, respondents were given the opportunity to assess the strengths and weaknesses of the PBTE materials. The most common reaction to the PBTE materials is a healthy respect for the technical quality of the modules themselves and the rigorous process that was used for their development. The strengths identified by various users were that PBTE materials are *self-contained, modularized, performance-based, individualized,* and can be used to *increase accountability.*

As expected, some people liked the curricula materials more than others, as no materials are applicable to everyone. However, it is important to note that some of the criticisms directed at the modules are really criticisms of the concept of performance-based teacher education. Some weaknesses identified by various users are that PBTE *reduces individuality,* has *limited emphasis on the affective domain,* and has the *potential for misuse.*

Conclusions

Although there is some evidence of opposition to the competency-based education and PBTE movements in some of the institutions studied, the following conclusions can be drawn about the distribution, use, and effects of the PBTE curricula: (1) it is the most widely distributed product ever developed by the National Center for Research in Vocational Education; (2) it has been widely adopted by educational institutions; (3) although not originally targeted for business and industry, many copies have been sold to this market; (4) users express a considerable sense of ownership of their PBTE programs; (5) it has changed many aspects of the delivery of vocational teacher education; (6) it appears to be more efficient and effective in educating teachers than traditional approaches; (7) it is perceived by users as a high quality product; (8) it is providing impetus to the movement toward competency-based instruction for all vocational education students; and (9) it appears to be having a long-term impact on improving the caliber of vocational education teachers.

I. AN APPROACH TO EVALUATING THE IMPACT OF RESEARCH AND DEVELOPMENT

Overview of PBTE

The National Center's Performance-Based Teacher Education (PBTE) curriculum has been widely adopted and has had marked impact on vocational teacher education programs. The purpose of the innovation is to provide performance-based instruction in the methods of teaching for preservice and inservice vocational education teachers. PBTE lends itself to modularized, performance-based, individualized, self-contained, self-paced, and open entry/open exit instruction.

Modularized

The Performance-Based Teacher Education curriculum is a series of 100 products divided into modularized units of instruction. The modules cover skills in ten instructional areas such as: instructional planning, instructional execution, instructional evaluation, and instructional management.

Performance-Based

Each module covers an essential teaching skill, such as developing a lesson plan, and individuals must demonstrate mastery of each skill through actual performance before moving to the next module.

Individualized

PBTE programs can be designed so that students can complete only those modules that cover competencies they need to master. The modules also can be sequenced in whatever order is appropriate to the students' needs.

Self-Contained

The modules are quite short, with an average length of fifty pages. However, they are designed to provide most of the basic information needed by a student to learn and demonstrate a competency.

Self-Paced

Students can complete the modules at their own pace, as quickly or as slowly as is appropriate for them.

Open Entry/Open Exit

Because the modules are self-paced and individualized, they are designed to be especially useful for students to begin and end their learning sequence at any point in time. They are also being used in settings with more traditional pacing and scheduling practices.

History of Development

Work on PBTE began at the National Center for Research in Vocational Education in 1967 with a research study by Dr. Calvin Cotrell to determine the important competencies for vocational-technical teachers. Following identification and verification of the 384 competencies, development of the modules at the National Center was begun in 1971 and continued through 1978. The program has been under the direction of Dr. James B. Hamilton since 1974. Supporting materials providing guidelines for implementing PBTE programs were also developed. The early versions were tested and extensively revised, with advanced testing being conducted from 1975 to 1976. The publisher, the American Association for Vocational Instructional Materials (AAVIM), initiated incremental release of the curricular and supportive materials beginning in March 1977 and ending in June 1978. The total amount of time required to develop the 100 PBTE modules and supporting materials was over ten years. Development was supported by the United States Office of Education (USOE) from 1967 through 1972 and the National Institute of Education (NIE) from 1972 through 1977 at a total cost of $2 million. Additional funding was received from the Bureau of Occupational and Adult Education, USOE, and NIE from 1975 through 1978 to support the field testing of the modules and the training of personnel for implementation.

Work in performance-based education is continuing at the National Center in the areas of non-discriminatory practices under Dr. James B. Hamilton and vocational education administrators' training under Dr. Robert Norton. Planning has been initiated for developing performance-based materials for other vocational education roles.

Purpose of the Study

The purpose of this study is to document the impact of the National Center's PBTE curricula and to examine the factors that have led to its widespread utilization. Impact is conceived as a multi-dimensional concept of change in the behavior of vocational educators. It can be assessed by measure of the distribution, use, effects, appraisal, and generalizability of PBTE. The ten study questions presented below are organized around these five dimensions.

Distribution

- To what extent has PBTE been *distributed* across the nation and internationally?

Use

- How are the organizations for which the product was originally targeted *using* PBTE?
- How are *diverse users,* such as businesses and industries, using PBTE?

Effects

- What are the major effects of PBTE?
- How has PBTE *affected teacher education programs* in institutions where it is being used?
- How has PBTE *affected* vocational education *classrooms* and *students* of teachers who received instruction through PBTE?

Appraisal

- What are the problems and weaknesses of PBTE?
- What are the strengths of PBTE?

Generalizability

- What can be learned from PBTE for increasing the impact of other research and development efforts?

Naturalistic Case Study Methodology

The primary technique used to collect data about the use and effects of PBTE was case study methodology using naturalistic inquiry techniques. Case studies were conducted at two sites which were viewed as exemplary users of PBTE. The results from the case studies were then verified through telephone interviews with thirty-seven other agencies using PBTE, and by the completion of a short survey by thirty-four agencies using PBTE.

Case Study Sites

The two sites selected for case studies were Temple University in Philadelphia, Pennsylvania and the University of Central Florida in Orlando, Florida. These sites were considered by the product developers to be two of the "best sites" using PBTE. The criteria used for selecting the best sites were:

- Past use of PBTE for at least one year and status as a current user
- Full implementation of a PBTE program, including use of a variety of PBTE modules and involvement of at least 100 students
- Personal commitment to PBTE by the staff heading the program

Site Visit Team

An internal/external team of three evaluators visited each site. The site team included an external consultant, Dr. Michael Q. Patton, a sociologist who directs the Minnesota Center for Social Research at the University of Minnesota; and two National Center staff members, Dr. Kay A. Adams,

an educational evaluator who coordinates work of the National Center's Evaluation Team; and Ms. Brenda MacKay, a former teacher and researcher for a state education association who is a member of the National Center Evaluation Team. The team was comprised of individuals both internal and external to the Center to enhance both product familiarity and credibility. Since the internal team members were familiar with PBTE and the vocational education community, they could build trust. The external team member, a recognized social researcher with three recent books on evaluation methods, added credibility and a certain detachment to the team. The external team member was especially effective in speaking to individuals who had negative feelings toward PBTE.

Site Visit Agenda

Three days were spent at each site. Time was spent both at the university and at local vocational schools and community colleges where PBTE-trained teachers were working. At each site an individual representing the state department of education was interviewed. In both sites, representatives from other major teacher education institutions in the state were interviewed. The majority of the time was spent conducting personal interviews with individuals who had used or been exposed to PBTE. Interviews were conducted with individuals representing all the roles relevant to the program. These included: university deans and chairpersons, university tenured faculty, paid staff of the PBTE program, volunteer PBTE staff, teachers in the program, local school administrators, and state department personnel. Across the two sites, a total of sixty-eight individuals were interviewed, thirty-seven of them at Temple University and thirty-one at the University of Central Florida. The type and number of respondents are depicted in Table 1.

TABLE 1

Individuals Interviewed During the Case Studies

Role	Number Interviewed		
	Temple	Central Florida	TOTAL
University deans, chairpersons, and senior faculty	5	3	8
PBTE program staff (paid)	16	4	20
PBTE school-based resource staff (unpaid)	2	2	4
State department personnel	1	1	2
School administrators	3	6	9
Teachers trained through PBTE	10	15	25
TOTAL	37	31	68

Interview Guide

Rather than develop structured questions, an interview guide was used as a basis for conducting interviews. The guide identified important topics clustered under eight categories to be covered through the interviews. Figure 1 displays the interview guide. Before going on-site, preliminary decisions were made about which topics to cover with different respondent groups. In the actual interview situation, the guide was used flexibly.

FIGURE 1

PBTE Interview Guide for Case Studies

1 – Product

1.1 Perception of goals and purposes (all)
1.2 Features–strengths and weaknesses (all)
1.3 Similarities to and differences from other approaches (all)

2 – Setting

2.1 Site factors affecting implementation (F,C,D)
2.2 Program before (C,D,F)
2.3 Characteristics of key people (C,F,D)
  a. administrators
  b. teachers
  c. students
2.4 Overall budget (C,D)

3 – Implementation

3.1 Description of start-up, right and wrong (D,C,S,A)
3.2 Start-up cost (D,C)
3.3 Training (F,D,S,A)
3.4 Support (D,S,A)
3.5 Integration with ongoing products/ program (D,F,S)

Respondents

F = University faculty
C = University deans and chairperson
D = PBTE program director
T = Inservice teachers
A = Local administrators
S = State department personnel

4 – Use

4.1 Typical work day/week (F,T)
4.2 How product used (F,T,D)
4.3 Number of people using (F,S,T,D)
4.4 Configuration of product use (F,S,T,D)
4.5 Level of acceptance (F,S,T,D)
4.6 Adaptation/used as intended (F,S,D,T)
4.7 Evaluation (all)

5 – People Effects

5.1 Initial reaction (F,T)
5.2 Changes in attitude
  a. subject area role (T,F)
  b. self in role (T,F)
  c. product (all)
5.3 Changes in job responsibilities
  a. work load (F,T,D)
  b. student contact (F,T,D)
5.4 Teaching skills (all)
5.5 Knowledge about teaching (all)
5.6 Job placement (F,T,D,A)

6 – Program Effects

6.1 Management/Policy
  a. Program administration (C,D)
  b. Recruitment (C)
  c. Admissions (C)
  d. Ongoing costs (C,T)
  e. Grading/credits/certification (C,F,S)
  f. Program completion rate (C,D)
  g. Goals and priorities

6 – Program Effects (cont.)

6.2 Resource Utilization
  a. Staffing/department organization (C,D,F)
  b. New funding (S,D,C)
  c. Equipment/materials (S,D,C)
  d. Space (D,C)

6.3 Instructional Process
  a. Course sequence (D,F,T)
  b. Course content (D,F,T)
  c. Teaching skills (D,F,T)
  d. Planning (D,F,T)
  e. Time to complete (D,F,T)
  f. Use of time (D,F,T)

7 – Students/Classroom Effects

7.1 Classroom instruction (F,A,T)
7.2 Discipline (F,A,T)
7.3 Student learning (F,A,T)
7.4 Classroom atmosphere (F,A,T,S)
7.5 Career planning and choice
7.6 Placement
7.7 Access and equity

8 – Community Effects

8.1 Community awareness
8.2 Community linkages
8.3 Changes in the workplace
8.4 Spread of program to others

Limitations and Weaknesses

There are five major limitations to the approach taken in this study. First, the study does not provide answers to such questions as, "Does a PBTE program produce better teachers than a traditional teacher education program?" or "Do students of PBTE-educated teachers outperform students of traditionally-educated teachers?" It is enticing to try to answer these questions when studying innovative programs. But the search for answers is difficult and often disappointing, as evidenced by the many evaluations of innovations which fail to show significant differences between the old treatment and the new. The approach taken in this study is descriptive, not experimental or comparative. The most salient features and most apparent effects of PBTE are described from different viewpoints of program participants.

Second, PBTE would be expected to have the strongest effect on teacher education programs, with slightly less effect on teachers and even less effect in classrooms and on students of PBTE-educated teachers. Therefore the evaluation was designed to collect more information on teacher education programs, with less data on teachers, and even less on classrooms and students, so that the evaluation could portray the strongest effects. However, it should be noted that statements by teacher educators concerning the effects of PBTE at other levels were used to indicate areas in which to probe teachers and local school administrators, and cannot be taken as direct effects.

Third, no data was collected directly from students who were being taught by teachers educated through PBTE. This area of the study is viewed as important but not within the time and scope of this study.

Fourth, the primary focus of the study is teacher education programs in four-year colleges and universities, which are the primary users of PBTE. Less data is reported on the impact of PBTE in other settings, such as postsecondary institutions, secondary schools, and business and industry.

Fifth, PBTE is a concept with many definitions and approaches. The National Center recommends a variety of approaches to implementing PBTE curricula in a program. Consequently, the entity which is being evaluated differs from setting to setting.

There are two overriding weaknesses in the study design and execution. First, this is a study of a National Center product conducted by an internal unit of the organization. Therefore, there is a natural suspicion about the objectivity of the findings. To enhance credibility, an external, impartial evaluator was used as a member of the evaluation team.

Second, the study focuses primarily on the effects of PBTE in the best cases. The effects are more pronounced and positive than might be found in all PBTE programs.

Follow-up Interviews with Targeted and Diverse Users

To supplement and verify the results from the case study, two additional data collection methods were used. First, telephone interviews were conducted with thirty-seven other agencies which had purchased PBTE materials. These agencies included eight colleges and universities, six postsecondary institutions, three secondary schools, and twenty businesses. Second, a brief survey was completed by thirty-four educational agencies, representing nineteen states, at a PBTE workshop in Orlando, Florida. Representatives from twenty-nine colleges and universities, three postsecondary institutions, and two state agencies provided information on the use of PBTE by their agencies. The results of this portion of the study are described in Appendix A.

II. USE OF PBTE

Setting

The sites chosen for the case studies are about as physically opposite as two sites can be. While Temple University students, bundled up against the damp cold of a Philadelphia winter morning snowstorm, complained of the expense and scarcity of parking facilities and fear of coming to the campus area after dark, University of Central Florida students sat in the seemingly eternal sunshine of a southern winter afternoon and talked about the need for bike paths so the students could ride their bicycles to campus and would not have to depend on their cars.

Temple University

Located in Philadelphia, Pennsylvania and incorporated in 1888, Temple University has taken on the characteristics of an urban, inner-city university. Temple University is one of twenty-five higher education institutions in Pennsylvania that offers one or more vocational teacher education programs. It is one of four centers (the others are University of Pittsburgh, Pennsylvania State University, and Indiana University of Pennsylvania) which offers a comprehensive program for both preservice and inservice vocational teacher education. Temple University has been designated as the center for a seventeen-county area in eastern Pennsylvania covering over 20,000 square miles.

University of Central Florida

University of Central Florida, founded in 1963 as Florida Technological University, was originally intended to be an engineering and technology supplier for nearby Cape Canaveral and the then-flourishing space program. The university occupies new buildings in a sandy palmetto and pine forest ten miles east of Orlando, Florida. One of nine state universities, the University of Central Florida has three branch service centers located in its 11,000 square mile, eleven-county service area.

Although the physical attributes are obviously different, the two universities do have one thing in common: PBTE. In addition to their belief in the concept and use of the National Center's modules, the two universities also have another necessary and important characteristic: a fully implemented and staffed PBTE program. Although the two delivery systems may have been put into place through different methods, the end results of the two programs are strikingly similar because the objective was the same: development of an individualized, performance-based, field-based teacher education program responsive to the needs of all constituents.

Implementation of PBTE

Temple University

Pilot program. In January 1973, Temple University's Division of Vocational Education piloted a performance- and field-based teacher education program in cooperation with Delaware County VoTech Schools, the Pennsylvania Department of Education, and the National Center for Research in Vocational Education at The Ohio State University. This consortium entered into an agreement for the purpose of field testing the modules which were being prepared as one of the National Center's many research efforts. Dr. Richard Adamsky, on the Temple University faculty since 1967, was selected to direct the program at Temple.

Fifteen intern teachers and one field resource person were initially involved, with financial support from the State Bureau of Vocational Education. Six instructional modules were provided by the National Center. The research study directed by Dr. Calvin Cotrell was the basis for the performance-based teacher education project which came to be called Program VITAL (Vocational Intern Teaching which is Applied Learning).

After a successful semester with the pilot program, the new delivery system for inservice education was expanded in September 1973 to include 114 teacher interns, 7 full-time staff, and 38 unpaid staff. To prepare for this expansion, the university's College of Education provided $80,000. Two two-week workshops to train staff were held in the summer of 1973 using state money.

Reason for adopting PBTE. Three factors were key in attracting Temple to PBTE. First, according to Dr. Adamsky, the program director, and Dr. Cotrell, the teacher education program at the university's Division of Vocational Education was in trouble. Both local school administrators and inservice teachers were calling for a more relevant teacher education program. These constituents were threatening to use community colleges which were being more responsive to their needs. The modules provided the perfect tool for a field-centered program. Second, there was a significant change in funding emphasis at the state level. The state department took the position that teacher education institutions would either install a performance-based approach or lose state funds. Third, Dr. Cotrell had moved from the National Center staff to the Temple University faculty and was key in convincing the university to experiment with the PBTE concept.

University of Central Florida

Pilot program. Five years later, in January 1978, a PBTE program was begun at the University of Central Florida. As at Temple, a program director, Dr. Glen Fardig, was hired specifically to implement PBTE, and funds were received from the state specifically for the PBTE program. Events moved fairly swiftly at the University of Central Florida from its opening in 1968, to a 1971 feasibility study of putting a vocational teacher education program in place, to implementation of a traditional program in 1974, to a phase-in of a PBTE program in 1978.

The PBTE program was fully functioning in September 1978 and began with seventy-nine inservice teachers at three service centers. No classes are held for the inservice teachers on campus. A major problem encountered was integrating current students into the new program while the old program was being phased out. Unlike Temple, the University of Central Florida decided not to run a dual program, and being a young university with no long-term traditions, it was relatively easy to phase in the new program by using course substitution.

Reason for adopting PBTE. State interest in performance-based teacher education played a major role in getting the university to change its program. In 1974, Florida State University and the state collaborated on a study to identify competencies for industrial arts teachers known as CBITE (Competency-Based Industrial Teacher Education). Dr. Harry Hall, chairman of the Secondary and Vocational Education Department, had developed a proposal for implementing a performance-based program at the University of Central Florida, and in 1978 the university received a state grant of $60,000 each year for three and a half years to run the program.

As a further impetus, some county school districts, such as Dade and Pinellas, felt the universities were ignoring their current needs in terms of training teachers, and had developed their own delivery systems for inservice education. A teacher could get state certification through a district-sponsored inservice program but there was no college/university credit attached to it. Furthermore, under a conventional university program a teacher may have to travel up to an hour to a university extension or on-campus class and may have to wait one or two years before a basic methods course would be offered. The PBTE modules allowed the University of Central Florida to provide a readily available, flexible program of vocational teacher education.

PBTE Program Operations

Temple University

Program components. Temple University primarily uses PBTE modules in its Program VITAL and Program MASTERY. In Program VITAL, each intern develops eighty-nine teaching competencies which are performed and assessed in an actual school situation. VITAL utilized 30 of the 100 modules developed by the National Center. Students take fifteen credits to earn a Vocational I certificate.

After teacher interns have earned Vocational I certification through VITAL, they can go through Program MASTERY to earn Vocational II, or permanent certification. MASTERY was implemented for the first time in 1977-78 school year. It utilizes eighteen additional PBTE modules and requires nine semester hours.

Most interns in the VITAL and MASTERY programs are in the trade and industry vocational program area with the next highest enrollment in health occupations.

PBTE modules are also used in the preservice business education program. Thirty-six modules are used in the one-semester capstone experience for students in the business education undergraduate program.

Implementation features. At Temple, the modules can be used in any sequence and interns can set their own pace. Interns work on the modules and competencies independently. Temple is organized in a semester system. Students completing the VITAL program typically spread the fifteen credits required for certification over three semesters taken, with six credits taken the first two semesters and three the last semester. As an incentive for interns to complete the program in one and a half years, they are asked to sign a contract by which they agree to complete the program and pay the costs for fifteen semester hours.

Field resource persons work with the interns on an individual basis to check their progress and to review their completed assignments. Interns videotape their performance when they feel they have mastered a competency and these are reviewed by the field resource persons. Regular small group

seminars where interns meet are a recommended but not a required aspect of the program. The frequency and content of seminars, which typically occur about once per month, is left to the discretion of the field resource persons.

Staffing. Temple makes extensive use of a diverse staff. The twelve field resource persons who have the primary responsibility for implementing the program are nontenured, predominantly non-Ph.D. staff. The PBTE program staff is comprised of the following: one program coordinator, three senior staff educators, one staff trainer, twelve field resource persons, and seventy resident resource persons.

1. Program coordinator (tenured faculty) – spends two-thirds of his time on all aspects of the PBTE program. The coordinator's objective is to make changes on a rational basis and to reduce variability in the delivery system. He oversees how the services are being offered, how time is being used, who's doing what—the logistics of the delivery system.

2. Staff trainer (tenured faculty) – utilizes one-third of his work load on training of field and resident resource persons. He develops and strengthens the use of modules, assesses the needs and competencies of the field resource persons, and provides feedback to other program staff.

3. Senior teacher educators (three tenured faculty) – one-third of their work load is spent supervising field resource persons (one-third of staff reports to each) and serving in the certification process as the university's representative on the Council of Educators.

4. Field resource persons (twelve nontenured, predominantly non-Ph.D. full-time staff) – each field resource person is responsible for between fifteen and twenty teacher interns in four to six schools having vocational programs in a specific geographic location. A field resource person averages forty-five minutes of direct contact with a teacher intern each week. He/she is responsible for checking out a teacher intern's performance or product required by each module. These staff members organize seminars each month to give interns an opportunity to discuss common concerns and share experiences.

5. Resident resource persons (seventy unpaid local school teachers) – help teacher interns work with the modules and assist interns in determining when they are ready to be evaluated on a specific teaching skill.

Enrollment. From 1973-74, the number of inservice teachers enrolled in VITAL steadily increased from 114 to 172 in 1975-76. It dropped to 143 in 1977-78, but for the current year, 1979-80, enrollment stands at 190. This figure includes those enrolled in the VITAL, MASTERY, and student teaching components.

Typical student. While it is difficult to typify a teacher intern, composite enrollment data show the typical VITAL intern to be a 39.3-year-old male with some college-level course work. Over 80 percent of the interns are currently employed at area votech schools with the remaining 20 percent employed at comprehensive high schools, special schools (public and private), and other education and noneducation agencies. Over half are located in urban areas; only 10 percent are located in rural areas. Over three-quarters are male, which is a slightly higher percentage of males than in the student population of the teacher interns. Almost half have had some course work beyond high school.

The typical path of an intern from an auto body shop to teacher certification in Pennsylvania is as follows: employment as a vocational teacher; application for and completion of an occupational competency test; application for intern certificate; enrollment in Temple University's Program VITAL; completion of fifteen credits (thirty modules) and a three-credit general education course; and final recommendation for certification by a council of educators.

Completions. About one-third of the group enrolled will complete the program in one year. Another third will earn certification by the end of the second year, and the remaining third will take more than three years. In Pennsylvania, a teacher has three years to earn provisional certification. To date, over 300 interns have become provisionally certified through VITAL.

Certification. When an intern has successfully completed the thirty modules in Program VITAL, a council of educators (COE) meeting is scheduled to determine if the intern should be recommended to the Pennsylvania Department of Education for provisional certification. These councils were formed in response to concerns of local administrators that they had no voice in the certification process of vocational teachers. Before Program VITAL, a faculty member from Temple University would be the only one to make that recommendation.

A council is comprised of three members: a senior teacher educator from Temple University, a local administrator, and a local school teacher. There is one council in each school. The three members review an intern's completed modules, lesson plans, and videotapes. This procedure contrasts sharply with the traditional method of counting credits, and places the responsibility for teacher preparation in part on local school personnel.

Modifications to PBTE. Draft versions of six new modules have been developed by program staff specifically for training resource persons. An additional six modules are in the development phase. After the initial training thrust several years ago, VITAL had no formal training program; and it was left up to the staff to nominate, train, and oversee the activities of resident resource persons. Maintaining consistency, in terms of what is expected of interns going through the modules, is one of the hardest jobs for staff. The training modules are designed to answer this need.

Level of adoption. It appears that PBTE has become a vital part of the core teacher education program for trade and industry (T&I) and health occupations within the vocational education department at Temple University. However, most of the faculty do not foresee a time when PBTE will be the only delivery system.

University of Central Florida

Program components. PBTE modules are primarily used in two programs at the University of Central Florida: a certification program and a B.A. degree program. Both programs are within the T&I and health occupations service areas. Modules are also being used more informally in the preservice business education program. The certification program is organized into seven clusters (similar to traditional courses) totaling thirty-six credits, during which the student must demonstrate proficiency in twenty-three teaching competencies in an actual school situation. Each cluster has a group of required and elective PBTE modules. A total of forty-five modules are used.

The B.A. program operates in a similar manner using fifty-nine PBTE modules and requires fifty credits for completion. In business education, which has preservice students, undergraduate skills classes, such as typing, are being converted to a performance-based approach. PBTE modules are used more informally as one of several instructional resources.

Implementation features. As at Temple, the Florida PBTE program is implemented as a field-based program with interns working independently at their own pace. The university is organized on a quarter system. Students are required to start the program with an Essential Skills Cluster which can be started at any point during the quarter. The remaining six clusters may be taken in whatever order the intern chooses. An inservice teacher usually takes one cluster each quarter (three to four credits) which utilizes between five and eight modules. Assuming a teacher takes three clusters per year, she/he can take up to three years to finish the certification program.

The Florida program uses seminars with more regularity than at Temple. An essential part of the program is the weekly one-hour seminars at three service centers. These are not lectures but discussions of common concerns and problems centered around a specific module. Videotapes are used in the seminars to check a teacher's performance of the skills covered by each module.

In order to accommodate teachers living at great distances from a service center, seminars are sometimes held at a conveniently located area technical school, or a teacher educator will hold a seminar via telephone once a week. There is an attempt to limit seminars to ten to fifteen students, with no minimum number established.

Performance of teaching skill is evaluated in the seminar setting and then again at a later time in the classroom by a field contact person. University of Central Florida faculty has developed testing-out activities for the seminars. Typically, a student will complete several clusters (over twenty modules) and be tested in the seminar at the completion of each module. Then at a later date, the teacher will be tested in the classroom on all the appropriate competencies learned up to that point.

As recommended by the PBTE developers, resource libraries have been set up at each service center. Each library contains all materials referenced in the modules, additional resource books, plus an example of a good product or model.

Staffing. The program staff includes a project director, three teacher educators, and twelve field contact persons. In contrast to the Temple program, the teacher educators, who have primary responsibility for implementing the program, are all tenured faculty.

1. Project director (tenured, full-time faculty) – oversees the operation of the PBTE program; plans and implements changes and innovations; and develops additional modules as needed.

2. Teacher educator (three tenured, full-time faculty) – spend approximately 60 percent of their time conducting weekly seminars and individual counseling sessions at the service centers. The remaining time is spent setting up field experiences, working with field contact persons, and taking care of records and reports.

3. Field contact person (twelve unpaid local school administrators) – get the word out to the school systems about the PBTE program and evaluate inservice teachers in the final check-off of modules. The field contact person is usually appointed by the county school office and is typically an assistant principal. The university then trains these resource

persons (twelve have been trained, two others are involved) by going through the modules and looking at videotapes and sample products to arrive at a common decision of what is acceptable.

Enrollment. The PBTE program began with an enrollment of seventy-nine for the first quarter of implementation (September 1978) at the three service centers. The South Orlando service center campus has the bulk of the enrollment with the other two centers combined having approximately 15 percent of the total. Enrollment has fluctuated somewhat between quarters. The fall 1979 quarter had 82 inservice teachers, but for winter quarter 1979-80 the enrollment jumped to 109.

Typical student. Only 10 percent of the students in the program are preservice teachers, comprised primarily of registered nurses who want a degree but are not necessarily planning to teach. The remaining 90 percent are inservice teachers, with two-thirds enrolled in the trade and industry program area (primarily for auto mechanics and construction trades), and one-third in the rapidly growing health occupations program. The typical path of an inservice teacher is similar to that in Pennsylvania: employment as a teacher; completion of an occupational competency test; enrollment in University of Central Florida's PBTE program; completion of thirty-six credits; and finally, certification.

Completions. The PBTE program at University of Central Florida has been in place since January 1978. To date there have been no "PBTE graduates," although a number of teachers earned certification during the transition from the former program to PBTE.

Certification. Beginning June 1980, certification requirements are being changed to reflect the state's movement to competency-based education at all levels of education. In addition to completing coursework, passing the Florida Teacher Certification Exam will become a requirement for attaining a regular teaching certificate. The exam, which at this date is not yet written, will be a full day, comprehensive written exam covering general academic and professional areas. The criterion-referenced exam is based on twenty-three essential teaching competencies and will contain four subtests: reading, writing, mathematics, and professional, which covers teaching skills.

Modifications to PBTE. Program staff members are involved in writing ten additional modules which will cover competencies recommended by the CBITE study and those mandated by law, such as reading and metrics. These modules follow both the format and structure of the National Center's modules.

Level of adoption. As the previous narrative has explained, the PBTE program at University of Central Florida has totally replaced the traditional approach to inservice programs on the campus and is truly field-based. As the director iterates, "If we had to have classes on campus, it would be impossible to deliver this type of instruction. PBTE allows us to teach small groups of teachers wherever they are. We can get instruction where it's needed."

TABLE 2

Use of PBTE at
Temple University and University of Central Florida
1979-80

	Temple University	University of Central Florida
Program Components	Voc I certificate–VITAL 30 modules (15 credits) Voc II certificate–MASTERY 18 modules	Certificate–45 modules (36 credits) B.A. degree–59 modules (50 credits)
Program Format	Semester 15 credits taken 6-6-3 over three semesters	Quarter 36 credits taken 4 credits/quarter
Service Areas	Inservice: T&I, Health Occupations Preservice: Business Ed., Cooperative Education	Inservice: T&I, Health Occupations Preservice: Business Education
Implementation Features	Added Council of Educators for certification recommendation process Developed modules for training resource persons Used differentiated staffing	Developed additional skills performance activities for seminar check off Hold weekly seminars at service centers Established resource libraries at each service center
Staffing	5 faculty (2 FTE) 12 paid staff (12 FTE) 70 volunteers	4 faculty (3.5 FTE) 12 volunteers
Enrollment	190	109
Time to Complete Program	1-3 years	3 years
Start-up Date	January, 1973	January, 1978
Size of Service Area	20,000 sq. miles (17 counties)	11,000 sq. miles (11 counties)

Summary

There are both similarities and differences in the delivery systems of vocational teacher education at Temple University and the University of Central Florida. These salient features are summarized below and in Table 2.

Components. Both programs concentrate on basic nondegree teacher certification. Time to complete the program ranges from one and a half to three years.

The basic certification program at Temple University uses thirty-five modules and that at the University of Central Florida uses forty-five modules. The number of credits attached to the modules varies from fifteen to thirty-six at the two universities, with an average of one and a half to two modules per credit. Neither university actually deals with the concept of modules per credit. Temple prefers to speak of fifteen credits, ideally taken 6-6-3 for three semesters, while University of Central Florida deals in three or four credit clusters usually taken four credits per quarter.

Service areas. Both systems are primarily geared for inservice teachers in the trade and industry and health occupations program areas. Use of the modules is beginning to spread into the preservice program area, primarily to business education, and to a lesser extent into cooperative education.

Modifications. The programs are flexible and changes are made when needed to make the delivery systems more responsive to constituents. These changes range from the development of a module for teaching reading to a new process for recommending a teacher for certification.

Staffing. Both systems have a program coordinator and utilize unpaid resource persons in the local schools as part of a diverse staff. Temple primarily uses nontenured field resource persons to conduct the field work with the inservice teachers while Florida uses tenured faculty.

Enrollment. Both programs have experienced a steady rise in enrollment since their start-up date. Enrollment at Temple was 190 for September 1979. At the University of Central Florida enrollment was 82 for the fall quarter and has risen to 109 for the winter quarter.

Use of PBTE at Other Institutions

Having reviewed the use of PBTE in-depth at two institutions, we then examined in a more cursory fashion how PBTE curricula are being used in other educational institutions throughout the United States. Results from thirty-four surveys distributed at a PBTE workshop have been analyzed and included with the data collected from telephone interviews with seventeen educational agencies.

Colleges and Universities

Most colleges and universities use PBTE curricula materials in both preservice and inservice programs. Over half the programs at both levels are in the trade and industry service area, with the next highest usage in health occupations education. The lowest reported usage of PBTE occurs in

TABLE 3

Use of PBTE at Other Educational Institutions[1]

1979-80 Academic Year

	Preservice	Inservice
Students enrolled Range Average	9-850 (N=21) 40 (N=20) (excluding 850)	8-837 (N=32) 60 (N=29) (excluding numbers above 500)
Program Staff Faculty Range Average	0-75 FTE (N=20) 2.5 FTE (N=19)	0-200 (N=31) 3.4 (N=25)
Volunteer Staff Range Average	0-30 (N=12) NA	0-51 (N=17) 21 (N= 7)
Time to Obtain Certification Range Average	1-4 years (N=15) 3.5 years (N=15)	1-5 years (N=18) 2.6 years (N=18)
Annual PBTE Program[2] Budget Range Average	$500-200,000 (N=4) $84,525 (N=4)	$20,000-200,000 (N=8) $89,425 (N=8)
Number of modules used in program Range Average	4-100 (N=15) 32 (N=18)	2-100 (N=15) 30 (N=26)

[1] Based on 17 telephone interviews and 34 surveys from a total of 37 colleges and universities, 9 postsecondary institutions, 3 secondary schools, and 2 state agencies.

[2] Most respondents indicated that PBTE programs were financed out of the regular department/college budget.

industrial arts, technical education, and agricultural education. As can be seen in Table 3, the enrollment figures, staffing, tuition, and number of modules used in preservice and inservice programs varies greatly.

College and university preservice programs using PBTE modules are typically classroom-based. PBTE modules are primarily used as supplementary instructional materials or as reference materials. Only in a few instances do modules entirely replace a course's required textbook.

Slightly less than half of the inservice programs are classroom-based, rather than field-based. Inservice programs are primarily for vocational teachers coming directly from business and industry who are earning state certification.

The most frequent use of PBTE modules is to teach "survival skills" to new teachers. An example of a new teacher "survival" course is the program for health occupations instructors developed at Central State University in Edmond, Oklahoma. The program begins with an orientation conference in August and continues through the fall with Saturday workshops. Modules are one component of a kit teaching new teacher "survival skills."

Use of unpaid local school staff (resident resource persons) was limited to a few of the institutions which had field-based programs. A majority of the respondents indicated that this was a troublesome aspect of the program. Those who used resident resource persons noted that the system of having peers evaluate another teacher's performance wasn't a successful venture for either teacher, and added that it was often difficult to train and motivate resource persons. Those teacher educators who did not have resource persons felt they weren't as successful as they could be if they had someone at the local level who could help teachers through the modules.

Postsecondary Institutions

At postsecondary institutions, PBTE modules are used on an inservice basis for both staff development and certification programs. In one instance, a staff development program uses needs assessment forms which indicate those modules an instructor can use to make up for any deficiencies in teaching skills.

By taking advantage of a postsecondary institution's certification program, an instructor can usually earn certification within a year by taking completely modularized, individualized inservice courses. In most instances, the state legislature was required to approve, and in some instances has funded, a postsecondary institution's certification program.

Several institutions also use resource persons to assist the instructors through a certification program. In most cases, these resource persons are other faculty members who are paid by the number of modules completed by their students. Other institutions found it better not to pay faculty resource persons, but to include the function of advising other instructors as part of the faculty work load.

At postsecondary institutions, PBTE materials are used in staff development programs. In the Maricopa (Arizona) Community College District, modules are used in a one-year project to develop a system to (1) improve the quality of instruction of part-time instructors, (2) provide a means for earning certification, and (3) improve communications between part-time and full-time faculty.

At Spokane (Washington) Community College, the modules are used in two programs: one offers an alternative method for earning certification on an inservice basis; the other provides a computer-based evaluation system for instructors. There has been little negative reaction to the evaluation system. Instructors say the system is "convenient," "helpful," "effective," and they "like having control over questions." Adjustments are continually being made in the system on the basis of user input. As the director stated, "Modules are a natural for connecting the evaluation to staff development."

Private Sector

Twenty individuals in other government agencies and in private sector businesses and industries were also contacted by telephone. Contacts were made to gather information on how PBTE materials are being used in these diverse settings.

Modules are used as part of a company-sponsored training program for improving the quality of its own instruction for employees. At Caterpillar Tractor Company in Peoria, Illinois, modules are one component of a training program for inhouse instructors. Usage is concentrated on modules which cover use of audiovisual materials. The training program is still in the developmental phase and is being tested at three of ten facilities. In fourteen Union Carbide chemical and plastics plants, modules provide resource materials for the company's training programs.

In six cases the modules had been used to some extent, primarily for individual study by the person who ordered them, but the modules were not currently being used.

In twelve cases, the person who ordered modules was no longer employed by the company, and the person's replacement was unfamiliar with the modules and their use.

In two cases the modules are currently being used organization-wide. It is postulated that although sales of PBTE modules to noneducational agencies constitutes 8 percent of total sales (12,400 modules to 220 agencies), systematic organization-wide use of the modules has probably been minimal.

A more detailed discussion of how other institutions are using PBTE curricula materials can be found in Appendix A.

III. EFFECTS OF PBTE

Determining the effects of the PBTE modules was a major focus of the field work. In interviews with program administrators, faculty, field resource persons, inservice teachers, resident resource persons, former students, and related vocational education personnel, we asked questions about the specific effects and consequences of using the modules, as well as the more general effects of performance-based teacher education programs. This section of the report reviews our findings on effects at the two case study sites.

Effects at Temple University

Major Effects

Increased the credibility and cohesiveness of the teacher education program. As has already been noted in this report, the PBTE modules and Temple's performance-based teacher education program are so intertwined that it is not really possible to clearly distinguish the effects of one from the effects of the other. The modules and the program have been integrated in such a way that the two components are interdependent. A common theme running throughout the interviews was that the smooth functioning of the program is made possible by the modules, and use of the modules is made possible by the existence and smooth functioning of the program. The director of the program explained the relationship between the modules and the program as follows:

> We did the program first before the modules existed. Then the modules came out. The modules allowed something good to occur. . . . the modules are pretty good, but they are not an end-all; they are not the program.
>
> The modules are not self-instruction; they are directed self-instruction; they have to be used under the direction of someone who knows what's in them; they have to be used in a program. The modules are tools within a program. They are good things to happen, but they are not the program.

While it is important to understand the perspective that "the modules are not the program," it is also important to understand the centrality of the modules to the program. In the minds of several of the interviewees, without the modules the program would not be viable. The modules give the program focus, credibility, and comprehensiveness. As one faculty member put it in commenting on the effects of the modules on the program:

> Sure, you could theoretically have the program without the modules, or write your own, but it would never happen. It takes too much time and effort and skill and resources to prepare good modules in all the areas they're needed. I'd say that without the modules there would be no program.

While it is not possible to clearly separate the effects of the modules versus the effects of the program, it is possible to delineate the effects of the combination and integration of modules and program in two primary areas—organization and curriculum.

Helped the teacher education program survive in a period of retrenchment. Perhaps the major effect organizationally is the continuation of a viable vocational teacher education program at Temple University. It is clear from a number of the interviews that when modules and a performance-based teacher education program were introduced, a potential for a serious decline of the vocational teacher education program at Temple was present. Moreover, the change in funding emphasis at the state level, changing demands of vocational schools and teachers in those schools, and possible university retrenchment combined to pose a serious threat to the continuation of vocational teacher education. The development of the performance-based teacher education program—with its field emphasis, utilization of PBTE modules, and pattern of differentiated staffing—made it possible to attract support from vocational educators, to receive state funds for program development and maintenance, and to maintain student recruitment and participation in the program. Thus, there is considerable evidence that the modules and the program had a significant impact on the ability of the vocational teacher education department at Temple to survive and offer a quality field-based program.

Spearheaded a performance-based approach for the entire state. The organizational effects are also evident at the state level. Before the introduction of performance-based teacher education programs, there were twenty-six colleges and universities offering vocational teacher education programs. The state department of education found it difficult to coordinate and deal with such a large number of programs. Thus, in conjunction with the introduction of a new emphasis on performance-based teacher education, the state created four centers for vocational education instruction. This economy move combined with a clear direction from the state, had a major impact on the substance and content of vocational teacher education instruction. These major organizational effects on the Department of Vocational Teacher Education at Temple University and in the delivery of vocational teacher education services throughout the state of Pennsylvania are directly related to the impact of the modules and performance-based teacher education on the vocational teacher education curriculum in Pennsylvania.

Standardized the skills taught. Use of PBTE modules specifically, and performance-based teacher education in general, reduced variability in the content of the vocational education curriculum. Before the implementation of performance-based teacher education programs, there was a much greater variation among the twenty-six different programs operated in the state than there now is among the four centers offering vocational teacher education instruction. Moreover, within any one of the four centers, variability of the curriculum has been reduced substantially. Through the introduction of PBTE materials, the curriculum at Temple University has been standardized and made explicit so that the content of vocational teacher education instruction is no longer subject to the uncertainties of the interest and orientation of whichever professor happens to be teaching a particular course. This combination of organizational focus, reduced variability in curriculum content, and more explicit program requirements has had a major impact on students in the program.

Shortened the time required to certify teachers. Overall, reports from faculty, staff, students, and others familiar with the program suggest that for most program participants there has been a substantial reduction in the time it takes to obtain vocational teacher certification. Before the introduction of performance-based teacher education and PBTE materials, it often took students three

years to complete the program for certification; now most students complete the program in one and a half years. As the director put it:

> One of the good things about the program is its productivity, the ability to move people through the program, complete the modules, and move on . . . The research evidence says that a classroom approach and our approach produce basically the same results in teachers, but our approach takes considerably less time. I call that a major improvement.

It is clear from interviews with teacher interns who have been through the program that they appreciated being able to move through the program quickly to earn their certification. At the same time, several field resource staff pointed out that for some teachers, obtaining certification through a performance-based program takes longer than it would take in a classroom setting. For those teacher interns who are not able to discipline themselves and who do not have the initiative to work on the program under their own direction, the length of time in the program can drag out. In some cases teacher interns have been working through the program for as long as four years. These teachers, some of the interviewees suggested, need the discipline and structure of class attendance to keep on track. For most teacher interns, however, the possibility of completing the program in one and a half years was viewed as a major strength.

This study has identified five major effects:

1. The modules made it possible for the program to function smoothly and with credibility; the program made it possible for the modules to be used in the way in which they were intended.

2. The vocational teacher education department at Temple University has been substantially reorganized and has survived crises of funding, retrenchment, and direction to offer a program of substantial quality.

3. Vocational teacher education programs in this state have been focused, reorganized, and given common direction.

4. State certification requirements have been made explicit through the performance-based materials and programs, making it possible for most teachers to complete the program and obtain certification in less time.

5. The combination of the PBTE materials and the general program of performance-based teacher education has reduced variables in the content of curriculum across professions.

These five major effects are clearly interrelated. Organizational changes have affected the curriculum, and curriculum changes are part of the foundation on which organizational changes were built. These major effects are also related to a substantial number of less dramatic changes brought about by the PBTE materials and the general direction introduced by performance-based teacher education. In the next section these more specific changes and effects are discussed.

Effects on the Teacher Education Program

More standardized and individualized curriculum. The previous section emphasized the contribution of PBTE materials in reducing variability in the content of curriculum and in making curriculum content more explicit. In essence, the materials guarantee that students will be exposed to a common set of concepts and information to a much greater extent than when a number of different professors teach the same classes. Despite the increased standardization of curriculum, there is basic consensus among the interviewees that the program is more individualized than traditional classroom instruction. It is primarily individualized in that each student can work at his/her own pace within program parameters.

As cost-effective as traditional program. We found it difficult to get a clear picture of the cost-effectiveness implications of PBTE as implemented at Temple. The cost implications suggested by interviewees vary considerably. Because of the field-based nature of the program and the staff necessary to work individually with students, it appears likely that there is some increase in personnel costs. On the other hand, the differentiated staffing being used means the personnel costs per staff person are considerably less than are the costs of academic professors. Consensus among interviewees seemed to be that total personnel costs are probably higher. At Temple these costs have been borne by the state and have, therefore, not constituted a drain on university resources.

A major cost of the program is travel reimbursement to the field staff. As fuel prices increase it may be quite difficult to maintain the large travel budget necessary to support field resource staff in serving individual students at their teaching sites. On the other hand, from a broader point of view, less fuel is used by one field resource person travelling to teacher interns than would be used by all of those teachers taking individual trips to the university for classes, as field resource persons can usually service several students at a site. Thus, from a societal point of view, the program as currently implemented probably conserves fuel, but it shifts fuel costs from individual teacher interns to the university program.

Increased productivity. This review of just a few of the factors involved in making a cost-effectiveness analysis suggests the complexity of the issue. Perhaps the clearest way to understand the potential cost-effectiveness of the program is to return to the issue of productivity. The consensus among the interviewees is that the program increases productivity. It saves teacher interns time and money because they can accomplish in one and a half years what formerly took three years to accomplish. If, as it appears, the same amount of information and degree of skill are being obtained in a shorter period of time, overall productivity has been increased, and increased productivity is a major factor to be taken into consideration in any cost-effectiveness analysis.

Effects on University Faculty

Changes in job responsibilities. While the staff has had a major impact on the implementation of the program, they have also been affected by the program. They have been given opportunities for academic appointments that were formerly not available. Their role responsibilities have increased contact between the university and the community, and have personalized and individualized contact between university staff and teacher interns in the program.

Changes in teaching skills. Fulfilling the role of field resource person involves additional training in counseling, interpersonnel relations, and administration. Field resource persons are essentially in an internship capacity which allows them to receive training and train others at the same time. Temple is currently developing modules for use in training field resource persons so that their training program will be performance-based. Interviews with field resource persons revealed that they felt much more competent about their skills as vocational educators than they had before participation in the program. As one staff person put it,

> They always say the best way to learn something is to teach it. Well, I can't begin to tell you how much I've learned about teaching in this position. It's been a tremendous experience for me and something I know I'll use throughout my career.

Effects on Teacher Interns

Increased support to new teachers. In the earlier section on major effects, we noted that teacher interns generally get through the program and obtain certification faster than they did in the traditional classroom situation. In interviews with teachers participating in the program, a number of other effects emerged. Former teacher interns reported that they felt a greater degree of support than they would have experienced in traditional settings; the program was considerably more convenient for them than it would have been if they had to travel to classes at Temple; and they felt the interpersonal contacts with the teaching staff were greater than usually experienced in a classroom. The convenience of the field-based program was mentioned consistently by current and former teacher interns, who also emphasized their appreciation of being able to work at their own pace.

Increased competency in teaching. A major focus of the interviews was on the long-term effects of participating in the program. The issue here is important: having demonstrated a competency at a given point in time, does that competency carry over and manifest itself in the ongoing teaching of teacher interns, or is the competency lost and/or ignored once the requirements for certification have been fulfilled? We put this question to faculty, administrators, teacher interns, field personnel, and other respondents. Interviewees varied in their assessment of long-term effects. Many of the teachers reported they had internalized and integrated much of the material so that they used it without having to think about it. There were, however, some common elements that were noted as having long-term carry-over effects:

1. An increased consciousness about objectives—the importance of having objectives and making them explicit to students
2. More polished skills in developing objectives, lesson plans, and student assignments
3. An awareness of the importance of using reinforcement techniques in teaching and skills in reinforcing student behavior
4. An understanding of the importance of individualized instruction and skills in individualizing instruction
5. Increased skills in using performance checklists to evaluate their own students

6. A better understanding of how to organize content into basic units of instruction

7. Having modules available for future reference and the ability to refer to specific modules when needed

Increased responsibility for learning and the ability to be self-evaluative. In responding to the question about long-term effects, a common theme expressed by program staff was the extent to which program participants learned how to be self-evaluative. In order to successfully get through the modules, teacher interns had to learn how to assess their own work and competencies. That process of self-assessment became internalized and carried over to affect their teaching in the long run.

Related to the theme of self-assessment is the idea of "taking responsibility for one's own learning." The program director expressed the importance of this idea and its effects on the learning process as follows:

> The typical persons who come into PBTE have never learned to take responsibility for their own learning—it takes a year to understand that the modules are related to what they are doing as teachers. Once they understand this and begin to take responsibility for their own learning they can go through the modules because they find they are relevant to what they are doing out there in their classrooms.

It is clear that the issue of long-term effects is an important one. It is also clear that the data presented here about the long-term effects is no more than impressionistic. The effects identified here suggest important outcomes that should be studied over time in a comparative framework to fully understand the effects of performance-based teacher education.

Effects of PBTE on Other Pennsylvania Institutions

The PBTE program had been operational at Temple during the state department of education's two-and-one-half-year study of vocational teacher education. This study resulted in a new concept of delivering vocational teacher education through four centers. Word started spreading from Temple throughout Pennsylvania and requests for information concerning PBTE came from local administrators. According to Kenneth Swatt, a department of education representative, there was "an outcry for PBTE." The state department helped spread the word about PBTE and supplied personnel and money.

For the past two years PBTE had been the number one priority of the department of education, both philosophically and financially. Although commitment to PBTE is not evident at all colleges in Pennsylvania, Swatt feels that, overall, Pennsylvania is number one in terms of implementation and use. PBTE has been expanded to the other three centers for vocational teacher education: Pennsylvania State University, Indiana University of Pennsylvania, and the University of Pittsburgh. A discussion of the PBTE programs at these three universities can be found in Appendix A.

Effects at University of Central Florida

Because the performance-based teacher education program is relatively new at the University of Central Florida, it is not possible to describe the effects of that program with much certainty. It is possible that effects will emerge over time in a way that is different from their current manifestations after only two years of operation. Nevertheless, many of the current effects are likely to become more evident in the future. Therefore, the effects discussed here should be viewed as a first step in understanding the implications and consequences of the Florida program.

Major Effects

Increased outreach capability. As noted in an earlier section, the University of Central Florida has been mandated by the state legislature to serve eleven counties spanning 11,030 square miles of central Florida. This area includes a variety of small, isolated vocational education programs and teachers who live at a great distance from the university. A program based on traditional courses taught at the university would not reach many of the teachers who live at great distances or in small localities where it is easy to overlook needs. A major effect of the new PBTE program is an increase in the university's outreach and delivery capabilities.

The PBTE program has allowed the university to increase its enrollment by serving more students in outlying areas. It also made it possible for the university to serve more beginning teachers coming directly from business and industry who previously earned certification through local educational agency programs.

The program is now able to serve a large area with small groups of teachers wherever they happen to be. It can deliver individualized instruction through the modules wherever training is needed. The chairman of the department explained this change as follows:

> Previously we were having the problem of delivering courses. That's the main thing this new program has done. We can deliver the program at any time right where the student needs and wants it. There's no question in my mind that the big thing is delivering the right instruction to the right people at the right time.

Increased flexibility. A corollary effect of this increased outreach capability is much greater flexibility in the teacher education program. Because the program is individualized, inservice teachers can begin the program whenever they are hired. Teachers hired in the middle of the year, or even in the middle of a quarter, can sign up immediately for the Essential Teaching Skills cluster. As the director of the program put it:

> We can now give teachers help immediately, whenever they are hired. We can only do that with modules in an individualized program.

One of the county vocational education supervisors also stressed the increased flexibility of the new program. Some vocational technical schools offer a night shift program, and teachers who work the night shift found it impossible to attend university classes. Now they can continue their work toward certification through PBTE.

The new program also allows special interest groups to meet and work together in seminars. For example, one local institution initiated a law enforcement training program and hired as instructors nine police officers who needed certification. With the new PBTE program it was possible to get all nine of these officers into a certification program at once. The county supervisor who provided this example summarized his assessment of the effects of the program by saying, "I think flexibility is really the key."

Increased convenience to inservice teachers. Closely related to flexibility is the increased convenience to inservice teachers. In interviews with teachers, this theme of convenience consistently emerged. An occupational health instructor said:

> I take the modules at a slow pace because I have too many hats to wear already. The modules have permitted me to do it when I have time instead of fitting my schedule to a lot of class time. I work at my own pace.

Another student said:

> I think being able to choose my own sequence and own schedule was the most important thing to me. This really beats the hell out of college lecturers reading to us out of a textbook.

Increased responsiveness to state mandates. Another major effect centers on the convergence between the state of Florida's emphasis on performance-based instruction in vocational/technical schools and the university's training of new teachers using a performance-based approach. This is important because it made it possible for the university to be responsive to the state mandate for performance-based education. The importance of the university assuming a leadership role in providing an example of performance-based education was articulated by one of the county supervisors. He pointed out that the state of Florida has a basic thrust in the direction of performance-based education, but because there's no state model, each school ends up with a different program. He felt that in attempting to develop a program at the county level that is performance-based, direction from the university in training new teachers through a performance-based approach was critical.

Increased use of performance-based instruction with students. At the local school level, this effect is manifested in the greater ability teachers feel they have to implement their own performance-based programs. For most teachers this simply means being more conscious of the importance of making objectives explicit and being able to write clear performance-based objectives. In addition, several inservice teachers said that their lesson plans reflected their understanding of a performance-based approach, and that they were better able to organize their teaching around competencies. One inservice teacher interviewed said that her teaching had been substantially affected by her experience in the PBTE program:

> About every module I've taken has been really relevant to my teaching situation. I've been able to develop many things I use from the modules. I now teach in what I call a modified competency-based approach. I use lab handouts, actually mini-modules that I developed myself. I evaluate my students when they're ready. They work at their own pace. I've

> adapted the V-TECS objectives also. The mini-modules work really well. My teaching is completely organized around their independent competency work.

Increased reliance on modules to deliver instruction. The final major effect is the extent to which vocational teacher education at the University of Central Florida has become dependent on modules. Because the program has become entirely organized around the PBTE modules, it is necessary to continue to look for ways of developing new modules, to revise old modules, and to keep the modules current with developments in vocational education. Program staff members are involved in writing ten additional modules which will cover competencies demanded by the CBITE study and those mandated by law, such as reading and metrics. These modules follow both the format and structure of the National Center's modules.

However, the staff members do not feel they have the time, resources, or capability to devote to the ongoing development and revision of modules. This means that the quality of the program has become very much dependent on future PBTE modules. The director of the program put it like this:

> We need new materials to do additional things, e.g., dealing with the handicapped, training field people, etc. *We are hooked on modules!* We can't get high quality materials without the National Center's help. A performance-based program is dependent on materials in a way traditional programs are not.

This section has focused on six major effects:

1. An increased outreach capability and a more effective delivery system for the university
2. Increased flexibility in serving inservice teachers—getting the right thing to the right teacher at the right time
3. Increased convenience to teachers in working at their own rate, on their own time schedule
4. Greater congruence with a state mandate to move in the direction of performance-based student instruction as well as a state mandate for the university to serve an entire region
5. Increased use of performance-based approaches by vocational teachers with their own students, because people teach the way they are taught
6. Dependence of the university program upon the continued development and revision of PBTE modules for the future quality of their program

Having reviewed these major effects, the report now turns to consideration of other effects at the University of Central Florida that relate to and, in some cases, grow out of the major effects noted above.

Effects on the Teacher Education Program

Increased team management. The introduction of PBTE to the vocational teacher education program has changed the staffing patterns in the education department. The collaboration necessary for implementation of the program has led to development of a team approach by which decisions are made democratically through a staff steering committee. Several faculty outside the vocational education program indicated that the teaming concept was likely to be extended to other sections of the department outside the immediate program.

Different definition of staff load. A second effect has been a shift in how faculty think about staff load. Traditionally faculty load is expressed in terms of credit hours. Experience with the PBTE program suggests to the faculty that a credit hour approach is not very meaningful. Thus, staff are reviewing other ways of conceptualizing faculty load, with particular attention to expressing load in terms of student contact time rather than credits.

Increased accountability. The administration and faculty at the university believe that the total impact of the new program is to make the university more accountable. One university administrator said:

> Our program could not exist without the modules . . . the materials have been proven. That's one of the real strengths of these modules. When you get through them, you can do what they've taken you through . . . it's a more accountable way of operating. There are not many programs that know what their students can do when they're done. We do know. We've looked at it. We know our products—what they can do.

Effects on University Faculty

No loss of professionalism. Implementation of the program appears to have been accomplished without great resistance from faculty, largely because infringement on other areas was relatively minimal. Because of the team approach to decision making, faculty members feel that there may even be a gain in professionalism because faculty have a say in every module studied, every competency developed, and every program decision made.

There is evidence that other areas within vocational teacher education—preservice business education and home economics—are moving in the direction of the PBTE program, which is currently focused on T&I and health occupations.

One dean noted that he wants to see the modules used with all secondary education teachers, not just those in vocational education. Five years in the future he would also like to see more performance-based instruction in a substantial part of the curriculum as well as in teaching techniques and skills.

Changes in job responsibilities. There is evidence that the teacher educator role at the university has been significantly changed.

1. Teacher educators have less need to spend time in preparation for teaching, especially the time traditionally spent in preparation for lectures. Because the curriculum is structured through use of PBTE modules, the basic curriculum development work is already done, and teacher educators can concentrate on preparing for group seminars and discussions.

2. Teacher educators spend "immensely more time on evaluation of inservice teachers' work and performance compared to traditional teacher education."

3. There is much more time spent in one-to-one contact.

4. Because less time is spent in lecture and formal instruction, this group of teacher educators finds teaching more enjoyable. The observation of the program director in this regard was confirmed by the three teacher educators:

> The reaction of teacher educators has been extremely positive. They didn't like lecturing much. They feel they're more effective now. There is no feeling of loss in not determining the full content of the curriculum. I think they're more satisfied.

5. It may be somewhat easier to pick up temporary or part-time faculty to help with courses because the modules establish much of the content and basic direction of a course. Such part-time faculty must be trained in how to use the modules, but the real key is "commitment and understanding. More than training, it's the commitment that is critical. Training is made easy by the modules and the content is guaranteed, but the teacher educators must have commitment to using the materials appropriately."

Taken together these effects mean that faculty autonomy in determining course content has been diminished and replaced with an increased emphasis on managing inservice teacher programs and directing individual inservice teachers. This is related to the team concept noted above. As the department chair put it:

> Courses have become a staff decision, not an individual professor making autonomous decisions. It's a team approach. What modules go into a course and how modules are linked to credits and how to facilitate groups—these are team decisions. It's a carefully-thought-out system, democratically derived.

Effects on Teachers

More time on task. Participants in this program are primarily inservice teachers from business and industry working toward certification. The length of the program is matched to the period of time it takes to earn certification—three years. In addition to the convenience and flexibility provided by PBTE, some interviewees felt that inservice teachers spend "more time on task." This means that teachers spend more time on activities directly related to competencies they are learning than they would in a traditional program. The evidence for this assertion was largely impressionistic, but the inservice teachers interviewed felt that they spent less time on trivial learning, rote memorization, and "pedagogical crap."

More personalized contact with teacher educators. It is clear that inservice teachers feel they have more personalized contact with the teaching faculty than is typically the case in traditional programs. Teachers reported that they received sufficient individual guidance and personal contact, the professors were sufficiently accessible, and they were able to get what they needed from them. The chairman of the department noted, "Our students have more personal contact by a factor of thirty than they would in a classroom." It is in this way that the program attempts to meet the affective needs of inservice teachers. One university administrator, however, responded to questions about affective needs with the following reservation:

> There are some components of PBTE that touch the affective, especially the seminars, but look—the affective is ignored to a great extent in all programs. Traditional teaching ignores it. PBTE ignores it. Teacher education and education in general ignore it.

Increased competencies. The administrator quoted above felt that the primary impact on teachers was that they ended up with a better knowledge of their capabilities.

> Students are learning basic teaching skills that they weren't learning before, and they now know what they have learned. The validation of watching someone perform is the way to go, I'm thoroughly convinced.

The same specific competencies found in the Temple program were also in evidence with University of Central Florida inservice teachers. The PBTE program provides for teachers the opportunity to continue their learning through certification, a baccalaureate degree, on to a master's degree. This makes it possible for vocational education teachers to take a long-term view of their educational career. Some teachers commented that the only reason they would even consider continuing their education to the master's level was due to the convenience of the PBTE program.

Effects on Classrooms and Students

Improved communication. As noted in the section on major effects, the state is already moving in the direction of providing a performance-based emphasis throughout the delivery of vocational education. As teachers obtain their certification through PBTE they are better able to conduct their own teaching in a performance-based framework. They have learned the terminology, theory, and methods of performance-based education.

Improved performance of administrators in evaluating teachers. Because the program is still relatively young, it is not possible to say with any certainty how local schools will be affected over the long run by the participation of their teachers in the PBTE program. It is possible, however, to speculate on some of the possible areas of impact, areas that deserve attention as the program develops. First and foremost in this regard is the potentially changed role of administrators who have the responsibility for evaluating teacher performances. The PBTE program relies heavily on local administrators to monitor the field experiences of inservice teachers. This means that local school staff must be trained in how to "check out" teachers as they demonstrate competencies in the classroom.

There is some evidence that in the past the performance evaluations by administrators have been haphazard and subjective. As these local administrators learn how to check out teaching performance, it is likely (and indeed there is evidence that it has already occurred) that the entire basis for per-

formance evaluation of teachers will be affected and become more performance-based. At this point in time, however, this aspect of the program is just beginning to be implemented. Problems exist in providing sufficient training and guidance to local administrators to effectively play the critical role they have been given in the program.

Increased use of modules for staff development. Another effect on local schools is in the area of ongoing staff development. At least one school director wanted to base his entire professional development program on the PBTE modules. This is an area in which the university is only beginning to get involved with local schools, but one that has considerable potential for impact. This potential is particularly important because turnover rates of teachers are quite low in the university's service area. Thus, relatively few new teachers are coming into the school systems and being trained through the PBTE modules. The total impact on the educational system will be much greater and much more rapid if teachers who already have their certification can be exposed to performance-based materials and techniques through staff development programs.

A local school director saw performance-based staff development as a key step to implementing performance-based student instruction:

> If you're going to do performance-based instruction with students, you must get teachers committed first. A staff development program based on the PBTE modules would help increase staff morale, confidence, competence, and ability to use a performance-based approach with students.

Effects on Other Florida Institutions

Ron Jeffries, director of the Program and Staff Development Section of Florida's Division of Vocational Education, said, "The state is committed to performance-based at all levels." He had hoped for a more rapid adoption of PBTE by the other state universities, but feels these institutions are hiding behind administrative roadblocks.

Jeffries sees the move to performance-based teacher education as a response to changes forced by the legislature, especially as the legislature moves from support of on-campus programs to decentralized inservice teacher centers as the suppliers of teacher education. "There is a real need for the universities to be more service-oriented."

Effects of PBTE on Other Institutions

As mentioned above, a survey of thirty-four educational institutions was conducted at a PBTE workshop, in part to validate the effects of PBTE discovered at Temple University and the University of Central Florida. Twenty-nine of the thirty-four respondents represented colleges and universities. Therefore, the comparability of responses is enhanced at least on the basis of similar agency type. Of the remaining five respondents, three represented postsecondary institutions and two were from state agencies. It should be emphasized that the data on teacher effects are teacher educators' perceptions of changes in teachers' behaviors. No data was collected from the teachers themselves or their supervisors concerning these effects as was done in the case studies.

The three major areas of effects that are validated by the survey respondents are: effects on teacher education programs, effects on vocational teachers, and effects on vocational education classrooms and students. Respondents were asked to indicate whether specific effects in each area had decreased, remained the same, or increased as a result of using PBTE.

Effects on Teacher Education Programs

Survey respondents verified that PBTE curricula materials and programs increased an agency's ability to serve people in their service area (74 percent) and increased use of a field-based delivery system (74 percent). PBTE increased an educational agency's flexibility in getting help to new teachers/instructors when they are hired (63 percent).

Effects on Teachers

Survey respondents verified most of the effects on teachers that were articulated during the case studies. The majority of survey respondents felt PBTE increased the following teaching skills more than traditional approaches: developing objectives and lesson plans (75 percent), individualizing instruction (79 percent), organizing content into units of instruction (68 percent), and evaluating the performance of their own students (67 percent). Seventy-five percent indicated that PBTE increased teachers' confidence in themselves as teachers. Over half (58 percent) felt there was an increase in personal contact between teachers and teacher educators.

Effects on Vocational Education Classrooms and Students

The only effect which was not validated by survey respondents was the effect of PBTE on the ability of local school administrators to evaluate teachers, with 76 percent seeing no effect.

The telephone interviews with seventeen educational agencies used the same naturalistic inquiry techniques as in the case studies, rather than prestructured instruments. Therefore, the results of these interviews are descriptive and anecdotal, and are not translatable into percentages. However, the majority of the respondents verified the following trends in the impact of PBTE.

1. PBTE has facilitated the survival of vocational teacher education at the college/university level.

2. PBTE has strengthened the movement toward a performance-based approach at all levels of education.

3. PBTE has opened communications among all those concerned with vocational education.

IV. STRENGTHS AND WEAKNESSES

In the course of interviews with program staff, teacher educators, teachers, and local administrators, respondents were given the opportunity to assess the strengths and weaknesses of the National Center's PBTE materials. In this section, the flavor of the interviews was preserved by presenting direct quotes representing all viewpoints.

As expected, some people liked the curriculum materials more than others, as no materials are applicable to everyone. It should be noted that, as a whole, respondents felt that the strengths of the PBTE modules outweighed the weaknesses.

One additional note of caution, or caveat, must be given. As this report has mentioned in other sections, the modules have become so closely identified with the educational delivery system that the individual components are no longer distinguishable in the minds of the users. Therefore, what is viewed as a weakness of the modules themselves may in actuality be a problem with the way in which the modules are being presented in a seminar, checked out by a resource person, or used by a teacher in the teacher education program. Some of the criticisms directed at the modules are really criticisms of the concept of performance-based teacher education.

Strengths

The most common reaction to the PBTE modules is a healthy respect for the technical quality of the modules themselves and the rigorous process that was used in their development. The following quotes highlight some of the strengths identified by various users of PBTE materials.

Self-contained

"I'm a very busy person and I like the PBTE modules because they are 95 percent self-contained. They're all meat and no fat." (Drafting teacher)

Modularized

"I think the modules are beautifully laid out. So simplified. So basic. There is no way we could cover all the areas we try to cover without the PBTE modules." (Dental hygiene teacher)

Performance-based

"I learned an efficient way to write objectives and lesson plans." (Employment skills teacher)

"I believe a teacher taught through PBTE is a better teacher." (Local administrator)

Accountability

"With PBTE we have a more accountable program. I've been around a lot of programs and very few know what kind of products they have. We know what our product is." (University chairperson)

"The reality of what it takes to become a certified teacher is made obvious much earlier and in a much clearer way." (Staff trainer)

Individualized

"I prefer the PBTE modules to listening to a teacher—I get more out of it." (Electronics teacher)

"The PBTE program is answering the everchanging needs of teachers and votech school administrators. I want all my new teachers to go through the [PBTE] program at Central Florida." (Local administrator outside Central Florida's service area and within another university's)

Carefully Tested

"I respect the work that's gone into the modules." (Local administrator)

"Our program couldn't exist without the modules. They've got to be proven like these are." (University department chairperson)

Weaknesses

Too General

"Specificity and individuality have been sacrificed in an attempt to be generalizable to a diverse user population. There's no way a single document can be relevant to all users nor do everything for all levels." (Teacher educator)

"I haven't learned anything inspiringly new from the modules." (Dental hygiene teacher)

"The modules are too skinny—I needed more information." (Employment skills teacher)

Reduce Individuality

"Education is both an art and a science. PBTE is individualized but it doesn't permit individuality; it actually reduces the latter." (Teacher educator)

Limited Emphasis on Affective Domain

"The modules have a tendency to develop 'technicians' rather than professionals. A module explains how to develop a lesson plan rather than describing how a lesson plan fits into a total education program." (Teacher educator)

"PBTE focuses on the mechanics of learning and specific pedagogical techniques while reducing emphasis on philosophy, interactive skills, and professionalism." (Teacher educator)

"It's impossible to prepackage what you need to know. Too many teachers are looking for recipes when what is needed is a good, solid, general background." (Teacher educator)

"PBTE provides for a personalized element to individualize instruction and contact, but it is not humanistic in the broader sense of providing for the development of a philosophy and interaction with peers, colleagues, and teachers that expose one to multiple perspectives. The inductive, thoughtful, and interactive approach to learning is diminished. Developing an educational philosophy is more a dialectic process than a process of program instruction through modules." (Teacher educator)

Require Too Much "Busy Work"

"Sometimes I'm not sure how extensive my response should be. If I followed the module, I'd spend too much time on each assignment." (Drafting teacher)

Require Highly Motivated Students

"PBTE requires students to be relatively highly motivated and self-directed. Some students can fall through the cracks and not really get the attention that they need to complete the program." (Teacher educator)

Potential for Misuse by Teacher Educators, Resource Persons, and Teachers

"Some faculty see the modules as an easy way out of teaching." (Teacher educator)

"The modules are an excellent example of something that can be cheated on." (Teacher educator)

"Now I just do the assignment. I start at the back of the book and then skim the module. No one's going to quiz you to see what you know." (Teacher intern)

"Modules are misused by administrators who think modules are 'band-aids' to slap onto a teaching problem." (Teacher educator)

Need for New Modules

"There is a need for more emphasis on classroom management—actual problems in the classroom, such as student discipline, drug education, and dealing with adolescents." (Teacher intern)

"The modules can't stay the same forever. There is a need even now for the modules to be updated. Education is moving rapidly and users need to see the materials as keeping pace with the changes." (Program director)

V. INTERNATIONAL DISTRIBUTION OF PBTE

The next section of the report looks beyond the few educational agencies discussed thus far to all the agencies, both nationally and internationally, who have purchased PBTE modules.

What do the Caterpillar Tractor Company (Illinois), Spokane Community College (Washington), Newberry High School (Florida), the University of Southern Maine, and Adelaide College of the Arts and Education (Australia) have in common? These five diverse agencies have all purchased PBTE modules during 1979. They are only five of the more than 1,600 educational institutions, companies, and individuals who purchased PBTE modules between March 1977 and January 1980. Data on the distribution of PBTE was collected through examination of sales records kept by the American Association for Vocational Instructional Materials (AAVIM). These records were used to compile information to determine: (1) the dollar volume of modules sold; (2) the volume of module sales to different types of agencies; (3) the number of agencies purchasing PBTE; (4) the volume of modules sales in each state as well as in foreign countries; (5) the amount of repeat sales; and (6) the influence of special contact on PBTE sales.

Dollar Volume Sold

Between March 1977 and January 1980, approximately $564,600 worth of PBTE modules were sold by the American Association for Vocational Instructional Materials. The 100 modules range in price from $1.55 to $5.00; supporting materials, such as resource guides and slide/audio tapes, range from $1.35 to $72.00. It is estimated that approximately 260,000 modules have been sold.

In comparison with other publications developed by the National Center, the distribution of PBTE far exceeds any other product. For example, in 1979 a total of 98,342 PBTE modules were sold. During that same time period, the next highest selling product was *Resources in Vocational Education,* which sold 2,450 copies or about 2.5 percent of the PBTE sales. In fact, during 1979 over three times as many PBTE modules were sold than all other National Center cost-recovery publications together.

Types of Agencies Making Purchases

The breakdown of the total sales within the United States is displayed by type of agency in Table 4. As of January 1980, 1,990 different education agencies, and 250 individuals in the United States, had placed orders for PBTE materials. These data are displayed in Table 5.

In terms of penetrating into the total market of higher education institutions, 210 (18 percent) of all postsecondary institutions in the U.S. and 360 (19 percent) of all four-year institutions ordered modules. This represents over 18 percent of all higher education institutions in the U.S.

Table 4

BREAKDOWN OF PBTE SALES BY TYPE OF AGENCY
UNITED STATES

Agency	Percent
Secondary School	11
Postsecondary Institution	11
College/University	59
State Department/State/Local Board	11
EDUCATIONAL AGENCIES SUBTOTAL	92
Business/Industry/Labor/Other	7
Individual	1
NONEDUCATIONAL AGENCIES SUBTOTAL	8
TOTAL	100

Table 5

NUMBER OF AGENCIES PURCHASING PBTE
UNITED STATES

Agency	Number	Percent
Secondary School	330	23
Postsecondary Institution	210	14
College/University	360	25
State Department/State/Local Board	90	6
EDUCATIONAL AGENCIES SUBTOTAL	990	68
Business/Industry/Labor/Other	220	15
Individuals	250	17
NONEDUCATIONAL AGENCIES SUBTOTAL	470	32
TOTAL	1,460	100

Number of Students Served

Based on enrollment data from 29 educational agencies, an average of sixty teachers are enrolled per PBTE program. Using a factor of sixty for the other 990 educational agencies who have purchased PBTE modules, it can be roughly estimated that about 59,000 vocational education teachers have used PBTE modules. This figure probably underestimates the total number of teachers served, since many PBTE programs have been in operation long enough to have served several cohorts of teachers.

Sales by Geographic Area

All fifty states, five U.S. territories, eleven Canadian provinces and territories, and twenty-four other foreign countries purchased PBTE modules. Sales to foreign countries, excluding Canada, represent 10 percent of total sales. Sales to Canada are 3 percent, with the remaining 87 percent to the U.S. and its territories. Sales in Canada are fairly evenly distributed throughout eleven provinces and territories. The majority of the foreign sales (83 percent) is to Australia, specifically to Adelaide College of the Arts and Education, which serves as the Australian national distributor. In February 1979, Stam Press, Ltd., of Cheltenham, England became the distributor of PBTE curricula to "all education institutions and agencies in the English-speaking world." Stam Press has a two-year agreement with AAVIM to purchase the PBTE curricula materials on a consignment basis. It is responsible for module sale throughout Europe, Africa, and Asia.

Ten states account for 53 percent of the U.S. dollar amount of PBTE sales and 46 percent of worldwide sales.

TABLE 6

Top Ten States Purchasing PBTE

1. Ohio	6. Texas
2. Pennsylvania	7. North Carolina
3. New York	8. Minnesota
4. Florida	9. Georgia
5. Washington	10. Michigan

Repeat Sales

For the purpose of this study, repeat sales are being defined as three or more orders from one agency. Repeat sales are an important indication of a purchaser's satisfaction with a product. Of the total sales in the U.S., repeat sales comprised over 67 percent of the dollar volume of PBTE sales. Of all agencies, 17 percent have made repeat purchases.

A breakdown of repeat sales by percentage of total sales is displayed in Table 7. Only Alaska and Arkansas had no agencies that repeatedly purchased PBTE materials.

TABLE 7

Percent of Repeat Sales of PBTE
United States

Agency	Percent of Repeat Sales
Secondary	40
Postsecondary	45
College/University	89
State Department	35
Business/Industry	25
TOTAL	67

Influence of Contact on Sales

During development of PBTE, thirty-nine states had some type of special contact with PBTE initiated by the National Center. Special contact with PBTE can be through one or more of the following forms of participation: development site, preliminary or advanced module testing site, pilot site, leadership site, National Institute workshop, postsecondary project, or CBI project. The National Center has had 107 special contacts in 75 postsecondary institutions and four-year colleges/universities. Of these seventy-five institutions, two-thirds (fifty) have had repeat sales.

Of the 186 postsecondary institutions and four-year colleges and universities with repeat sales, 50 (27 percent) have had PBTE contact. Eight states have had four or more PBTE contacts. Of these, three have had dollar volume sales in the top ten states (Pennsylvania, New York, and Michigan). Three of these eight states (Michigan, Indiana, and Pennsylvania) are in the top ten states for repeat sales.

Summary

PBTE modules have been widely distributed to both educational and noneducational agencies. Since March 1977, approximately 260,000 modules have been distributed, constituting over half a million dollars in sales. Approximately 1,350 different agencies have purchased modules, including 18 percent of all higher education institutions in the U.S. All fifty states, five U.S. territories, eleven Canadian provinces, and twenty-four other foreign countries have purchased modules. Over 67 percent of PBTE sales have been repeat sales.

VI. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The Performance-Based Teacher Education (PBTE) curriculum developed by the National Center for Research in Vocational Education has been widely adopted and has had marked impact on vocational teacher education programs. Many programs have been implemented using the National Center's 100 PBTE modules and support documents. In January 1980, two exemplary sites using PBTE, Temple University in Philadelphia, Pennsylvania and the University of Central Florida in Orlando, Florida, were studied in depth. Additional data were collected through conducting telephone interviews and surveys covering seventy-one PBTE programs and examining product distribution records.

Distribution

From March 1977 through January 1980, over 260,000 PBTE modules have been distributed, constituting over half a million dollars in sales. Over 1,350 different agencies and 250 individuals have purchased modules including approximately 990 education agencies and 140 international agencies. The primary purchasers have been colleges and universities which represent 59 percent of the total dollar sales. Over 18 percent of all higher education institutions in the United States have purchased PBTE. All fifty states, five U.S. territories, eleven Canadian provinces, and twenty-four other foreign countries have purchased modules. Based on enrollment data from twenty-nine educational agencies, an average of sixty teachers are enrolled per PBTE program on a yearly basis. Since 990 educational agencies have purchased PBTE modules, a rough estimate of 59,000 vocational education teachers have used PBTE modules.

Use

Full-scale implementation as well as creative adaptations of PBTE are occurring at many agencies across the nation. Of the 990 educational agencies which have purchased PBTE modules, 360 are universities, 330 are secondary schools, 210 are postsecondary institutions, and 90 are state agencies. At colleges and universities, PBTE is used for preservice and inservice vocational teacher education programs. PBTE is being used to train teachers in agricultural education, business and office education, distributive education, health education, home economics education, industrial arts, technical education, and trade and industrial education. At secondary schools, PBTE modules are used for inservice programs for practicing teachers. At postsecondary institutions, there is an increasing use of the PBTE modules for staff development programs, most frequently as part of a comprehensive personnel evaluation and development system. In addition to education agencies, over 220 noneducation agencies such as Caterpillar Tractor Company, IBM, and Union Carbide are using the PBTE modules, most frequently as part of company training programs for improving instructional techniques.

Effects

Three levels of effects of PBTE were investigated: (1) effects on vocational teacher education programs; (2) effects on vocational teachers; and (3) effects on vocational education classrooms and students.

Effects on teacher education programs. Based on in-depth interviews with forty-five college and university administrators and faculty, it was found that PBTE has precipitated significant changes in many vocational teacher education programs. In a period of declining need for secondary teachers, the National Center's PBTE curricula has helped university vocational education departments *survive* crises of funding cutbacks and faculty retrenchment. Because PBTE lends itself to an individualized approach, universities can provide field-based programs to larger service areas. PBTE made it possible for universities to attract community support, receive state funds for PBTE program development, and maintain enrollment. PBTE has (1) increased students' *access* to vocational teacher certification by providing self-contained instruction especially useful in rural and isolated areas; (2) increased *flexibility* in getting help to new teachers immediately whenever they are hired; (3) increased *productivity* of teacher education programs at some institutions by shortening the time required to certify vocational teachers and lowering costs by using differentiated staffing; (4) reduced variability and increased *accountability* of vocational teacher education curricula through standardizing the skills vocational teachers are required to master; and (5) significantly changed the role of the university teacher from a classroom lecturer to a *learning facilitator* frequently working with students on a one-to-one basis.

Effects on teachers. Based on in-depth interviews with forty vocational education teachers and local school administrators, there is evidence that PBTE is having long-term impact on *improving the caliber of vocational education teachers,* especially in the areas of instructional planning, organizing instruction, student reinforcement, individualizing instruction, and student evaluation. There is also evidence that PBTE increases teachers' ability to be self-evaluative and their confidence in themselves as teachers.

Effects on classrooms and students. PBTE also has contributed directly to vocational education classrooms. In an era of increased emphasis on basic skills and competencies, PBTE has *added impetus* to the movement toward competency-based instruction for all vocational education students. As one administrator noted, "If you're going to do competency-based instruction with students, you must get teachers committed first." PBTE has (1) increased the use of competency-based *techniques with students* because teachers teach the way they are taught, and (2) improved the performance of local school *administrators in evaluating teachers.*

Appraisal. In the course of interviews with program staff, teacher educators, teachers, and local administrators, respondents were given the opportunity to assess the strengths and weaknesses of the PBTE materials. The most common reaction to the PBTE materials is a healthy respect for the technical quality of the modules themselves and the rigorous process that was used for their development. The strengths identified by various users were that PBTE materials are *self-contained, modularized, performance-based, individualized,* and *increase accountability.*

As expected, some people liked the curricula materials more than others, as no materials are applicable to everyone. However, it is important to note that some of the criticisms directed at the modules are really criticisms of the concept of performance-based teacher education. Some weaknesses identified by various users are that PBTE *reduces individuality,* has *limited emphasis on the affective domain,* and has the *potential for misuse.*

Conclusions

The following conclusions can be drawn about the distribution, use, and effects of the National Center's PBTE curriculum:

1. The PBTE curriculum has been widely distributed nationally and internationally. During 1979, over three times as many PBTE modules were sold than all other National Center cost-recovery publications together.

2. The PBTE curriculum has been widely adopted by educational institutions. An estimated 59,000 vocational education teachers have been educated using PBTE modules.

3. Although not originally targeted for business and industry, many copies of the PBTE curriculum have been sold to this market. There are some interesting examples of use, but extensive adoption of PBTE for staff training programs by the private sector is not evident.

4. PBTE users expressed a considerable sense of ownership of their performance-based programs. Modules have been selected from the pool of 100 and flexibly installed. There is no standardized PBTE program. All the programs studied differed in their selection, organization, and sequence of competencies to be taught.

5. PBTE has significantly changed many aspects of the delivery of vocational teacher education at institutions where it has been fully adopted. At these institutions the programs are more field-based, more consistent in what is taught, more flexible in serving the needs of their clients, and more capable of serving a larger geographic service area. The role of the teacher educator has significantly changed from a classroom lecturer to an instructional manager.

6. There is some evidence that PBTE may be more efficient and effective in educating teachers than traditional approaches. It appears that PBTE can shorten the time required for teacher certification without sacrificing program effectiveness. There is also some evidence that PBTE-trained teachers excell in the areas of instructional planning and management.

7. The work on PBTE at the National Center, which began in 1967, was well-timed to ride the crest of a popular educational movement. PBTE modules were among the first of their type available to vocational educators. The spread of PBTE was further accelerated by financial support from state educational agencies since many selected performance-based education as one of their top priorities for funds going to teacher education institutions.

8. Although this study focused primarily on users rather than nonusers of PBTE, there was evidence of some opposition to the performance-based education and performance-based teacher education movements in the institutions studied. The opposition was typically expressed as opposition toward the concept of performance-based education which is viewed as overly mechanized and simplistic, rather than toward the National Center's PBTE curriculum.

9. The PBTE curriculum is perceived by its users as a high-quality product. The systematic process used to develop PBTE, especially the considerable field involvement and revision cycles, is respected. The conciseness and attractiveness of the modules are consistently praised. The National Center staff who have worked in this area are known to most users and are respected.

10. The market for performance-based materials in colleges and universities appears to be reaching its saturation point. There is evidence of a large and growing market for PBTE for staff development programs in local education agencies, junior and community colleges, and business and industry.

Recommendations

For the National Center

1. Since there is a larger market for performance-based materials in local education agencies, junior and community colleges, and business and industry than in colleges and universities, it is recommended that the National Center maintain and strengthen its work on performance-based staff development programs.

2. Given the need for new modules in additional areas of teaching, and the dependence of many agencies on modules, it is recommended that the National Center continue to develop new modules and periodically revise and update existing modules. It is recommended that modules in the following subject areas be developed: special needs, especially physically handicapped; student discipline; survival skills for new teachers; teaching basic skills, such as reading and math; and specific vocational service areas.

3. Since PBTE materials are highly acclaimed by users, it is recommended that PBTE development methodology and module format be replicated for other National Center projects.

4. Since PBTE has been distributed and used so widely, it is recommended that the numerous techniques used to disseminate PBTE materials be replicated for other National Center projects.

For Users of PBTE

Our findings on the use of PBTE reinforce the implementation guidelines provided by the developers of PBTE materials in the *Guide to the Implementation of Performance-Based Teacher Education*. The following five recommendations are seen as critical dimensions of an effective PBTE delivery system.

1. School-based resource persons are viewed as a critical link in the delivery of PBTE. They should be regularly available to observe the teachers at work, confer about learning activities and problems, and evaluate a teacher's performance. It is essential that all resource persons receive comparable training in all aspects of a PBTE delivery system, and that performance criteria be established for resource persons.

2. It is desirable that teachers being educated through a PBTE program be given an opportunity for interaction on a regularly scheduled basis. It is recommended that group sessions be held at least monthly to allow teachers to share experiences, discuss mutual problems, seek help, and improve interpersonal skills.

3. A PBTE program can significantly change the role of teacher educators and other staff, and implementation of such a program may meet with some staff resistance. It is important that implementation strategies be developed to involve in the decision making process those who will be most affected by the new program. Several respondents felt it was very important for universities to

establish their own teaching competencies, even if they end up being just about the same as those identified by the National Center. The respondents felt that since PBTE reduces faculty control over what is taught, staff should make the initial content decisions for the PBTE program.

4. Regular communication and publicity about PBTE programs are critical components to attracting students and resolving misconceptions. To attract students, program information should be broadly disseminated to local and state education agencies, and to potential users in trade unions, professional organizations, and other noneducational agencies. Program information should be disseminated frequently, since there continues to be misconceptions about PBTE programs, and programs themselves change frequently. Program information should be disseminated in a variety of ways, such as systematically using former and current students to attract new students.

5. A final item is support from the state department of education, ideally in terms of both money and philosophy. At both case study sites, the state department had provided monies to be used specifically for the PBTE program. This money paid the salary of a program director and provided for the hiring of an entirely new staff at Temple and for additional staff at the University of Central Florida. The education departments of both states were committed to PBTE at all levels of education which assisted in the promotion of PBTE throughout the state.

VII. GENERALIZING FROM THE PBTE EXPERIENCE

Why have the National Center's PBTE curricula materials been so widely adopted? What can be learned from PBTE for increasing the adoption of other R&D efforts? There appear to be several critical factors that have contributed to PBTE's widespread adoption and impact. At first glance these factors may seem obvious. But since they are frequently absent in R&D efforts, it is important to take a second glance. In reflecting on the PBTE experience, it is difficult to determine the relative importance of these factors. Could some of these factors have been ignored at no loss to PBTE's success? No systematic attempt to examine the relative importance or criticality of these factors has been undertaken. Based on our experiences with and reflections on PBTE, we offer the following critical factors for success of an R&D effort.

1. Meet a truly critical need—one that appears to be increasing, one that is not being well met by other products in use or under development, and one that it makes sense to meet through an R&D effort.

2. Have a clearly defined target audience which is involved in developing, testing, and using the product as early and as extensively as possible.

3. Have a committed and highly persistent project staff who care about their work and become personal advocates for its use in the field.

4. Use considerable and varied dissemination techniques including workshops, technical assistance, deploying former project staff to start field efforts, establishing networks and consortiums of users, and using successful users/sites to train others.

5. Provide a product that is multifaceted and flexible so that it has appeal to different users in varied settings. The product should invite users to adapt the product to their own settings. This feature facilitates ownership which, in turn, facilitates continued use of the product.

6. Provide a high-quality, carefully researched, fully tested, and well-written product.

7. Provide a product that is used with or has direct impact on students. Since students are the main business of education, this feature helps assure that the product will be used, will be used by enough people to make a difference, and will be used long enough to make a difference.

8. Provide professionally printed products from a reputable publisher to ensure that there will be sufficient quantities of the product readily available to users when the products are needed.

APPENDIX A

INVESTIGATION OF THE USE AND EFFECTS OF PBTE ON OTHER INSTITUTIONS

Targeted Users

At the conclusion of the site visits, telephone interviews were conducted during January and February 1980 with users of PBTE modules at three educational levels: secondary, postsecondary, and college/university. These interviews ranged from fifteen minutes to an hour and a half, during which time the following areas were investigated: current use of PBTE modules; the impact of PBTE on programs, resources, and people; and areas of concern and change in PBTE materials.

Modules are primarily used by education agencies to provide "survival" courses for new teachers, for staff development, and in preservice/inservice teacher education programs. It should be noted that there is wide variety in the way modules are used by the various educational institutions contacted, ranging from use as reference materials or suggested outside readings in a traditional teacher education course to a complete PBTE delivery system for teacher education. Furthermore, the following synopses do not represent all the PBTE programs at a particular institution. In most cases only one representative from an institution was contacted, and this person responded only to questions about that program with which he/she was associated.

Secondary Schools

Upper Valley Joint Vocational School, Piqua, Ohio

PBTE modules were used in a staff development project from March 1977 through June 1978. Fifty of the 100 modules were selected for the project, which involved the entire school staff of seventy teachers and thirteen administrative and supervisory staff. Modules are still being used for inservice activities and as evaluative tools by administrators.

Minuteman Regional Vocational Technical School, Lexington, Massachusetts

Approximately forty teachers have been using the modules since 1978. Modules are a component of an integrated inservice training program for professional growth and salary schedule advancement. Modules are also part of the school's evaluation system; if administrators see that a teacher has a weakness in a particular skill area, they will recommend use of a specific module to correct that weakness.

High Point School District, High Point, North Carolina

Project PROBE, a staff development project for vocational teachers which began in 1978, uses the modules for the component which covers certification of trade and industry teachers. The certification component was modeled after Program VITAL at Temple University.

Postsecondary Institutions

Maricopa County Community College District, Phoenix, Arizona

Modules are being used in a one-year project, begun September 1979, to develop a system to (1) improve the quality of instruction of part-time instructors, (2) provide a means for earning certification, and (3) improve communications between part-time and full-time faculty. (Arizona is second in use of part-time faculty in the nation.) Twenty-six National Center modules were chosen from the B, C, and D categories. From these an instructor must select and complete six modules. To be certified, an instructor must also complete six modules, developed at Maricopa, covering the community college system in Arizona. Seventy-five part-time instructors (6 percent of the faculty) are involved in the project along with twenty-five full-time faculty who are serving as paid resident resource persons.

Albuquerque Technical Vocational Institute, Albuquerque, New Mexico

Modules have been used in the Institute's three-phase Professional Development Plan (PDP) since 1977. The PDP is now a condition of employment and approved by the state as a method of earning certification. An instructor usually completes thirty-nine modules, primarily from the B and C categories, in one year to earn certification. The Institute's director would like to use modules in the plan's third phase, as a periodic review and evaluation of an instructor's performance of specified teaching skills.

Spokane Community College, Spokane, Washington

Modules are used in two distinct ways: for staff development and for certification of new instructors. Currently thirty instructors are enrolled in the certification course work which consists of three three-credit courses (twenty-one modules). Spokane also offers a computer-based evaluation system. From 2,000 evaluation items based on competencies identified by the National Center, instructors can assess their own needs and those of students, faculty, and other staff. The evaluations are then analyzed by computer, which indicates those modules to be used to make up for instructional deficiencies. Last quarter 177 instructors at the college used the assessment system for their own professional development.

Waukeesha County Technical Institute, Pewaukee, Wisconsin

Beginning in 1977, modules were one component of a program for faculty development and evaluation. Out of a faculty of 120, approximately 20, primarily trade and industry and industrial arts instructors, have used the modules. In addition to inservice staff development, modules are used as background materials by instructors seeking certification.

**Community College of Denver-
North Campus, Denver, Colorado**

The college first ordered the modules in September 1979 for use by the twenty-eight faculty members in the Industrial and Applied Science Division. The faculty is beginning the process of redefining and reorganizing the college's modularized educational delivery system, and the PBTE modules will be used to assist the faculty in this task.

**Monroe Community College,
Rochester, New York**

Modules were used by the college faculty in a project which provided staff training for companies, businesses, and organizations in the public and private sector. The faculty was responsible for providing training at the secretary-technician level in such skills areas as communications skills and time management. In the project's second year, 837 secretaries and technicians were trained (777 training hours) by fifty faculty members.

Colleges/Universities

**Central State University,
Edmond, Oklahoma**

The university has developed two programs for health occupations instructors. Modules are used in a kit of "survival skills," one component of a program for new teachers which begins in August and continues throughout the fall with Saturday workshops. In addition to this special program, over 100 inservice and preservice teachers are enrolled in either the bachelor's or master's degree tracks. Currently one faculty member is in charge of this program, which uses approximately seventy modules in a classroom, rather than field-based, instructional setting.

**North Carolina A&T State
University, Greensboro, North Carolina**

The university is currently running an alternative certification program which utilizes between thirty-six and fifty-four modules in three of the five courses for certification. This program is primarily for inservice trade and industry and industrial arts teachers, although there is some use of the modules in preservice programs. Since the program's inception in 1978, enrollment has fluctuated between thirty and sixty. Two faculty members are actively involved in the field work aspect of the modularized instruction program.

**West Virginia Institute of Technology,
Montgomery, West Virginia**

For two years the institute has been running a hybrid modularized program for preservice (approximately 50) and inservice (currently 700) teachers in trade and industry and health occupations. Modules are used in a traditional classroom setting by two faculty members. Thirty-two adjunct faculty are involved with the field work aspect of the program. Approximately fifty modules are used in the eight courses.

**University of Wisconsin-Stout,
Menomonie, Wisconsin**

Modules have been used for three years in three of the six certification courses for inservice teachers at the secondary and postsecondary levels. Currently forty inservice teachers, at fourteen sites throughout the state, are enrolled in the field-based program which utilizes modules, teleconferences, and educational television.

**Mississippi State University,
Mississippi State, Mississippi**

Modules have been used to a limited extent for five years in the nondegree, classroom-based certification program for inservice trade and industry and health occupations teachers. In addition, three modules are used in a one-week orientation program for new teachers. In a calendar year, approximately 100 teachers go through the orientation program. Attendance is mandated by the state but no college course credit is given.

**University of Vermont,
Burlington, Vermont**

Modules have been used since September 1977 for preservice and inservice teachers in industrial arts, and preservice teachers in home economics education. Currently fifteen students and three faculty are involved in the home economics program, which utilizes all modules in category B as part of a three-credit course.

Purdue University, West Lafayette, Indiana

The university has been using the modules in two programs: industrial arts and home economics education. Currently 75 students are enrolled in the preservice undergraduate home economics program, and there are 75-100 inservice master's candidates. Almost all modules are used to some extent, either as resource or curriculum materials, in the traditional classroom/laboratory setting.

**University of Minnesota, Research and
Development Center for Vocational
Education, Minneapolis, Minnesota**

Modules were used indirectly in a research project in which instruments and a feedback system were designed for individual and group staff development programs. Module titles became needs assessment statements. The system was tested on over 650 teachers, 160 supervisors, and 30,000 students in Minnesota, Virginia, Kentucky, and Wisconsin. The project's funding ran out at the end of the 1977-78 academic year. Some persons at the state and university levels were concerned that this approach to staff development, if fully implemented to include both computerized teacher needs assessment and use of modules to remedy deficiencies in a field-based situation, could bypass traditional university-based teacher education programs. Modules are currently being used in the first-year teaching program. The needs assessment form developed in the project is used as a self-tutoring device by new teachers. Staff members then analyze the form and recommend modules to assist teachers in those instructional areas where they are weak.

Pennsylvania State University,
State College, Pennsylvania

The university is now in the final year of a three-year PBTE implementation project which this year is serving sixty-five inservice teachers in approximately thirty institutions, including area vocational technical schools, comprehensive schools, and community colleges. The program includes a full-time director, Dr. Wayne Detwiler, and one field assistant.

During the project's first year, the teacher competencies identified by the National Center were re-examined based on the perceived needs of vocational teachers in Pennsylvania. Other competency lists were used and surveys were conducted of all industrial arts and trade and industry instructors in Pennsylvania. The project staff concluded that the competencies needed by vocational teachers in Pennsylvania did not differ significantly from those on the National Center's list. These findings are another validation of the National Center's initial pioneering efforts in this area.

This program is currently using twenty-two PBTE modules; on the average, four modules equal a credit. Modules are beginning to be used in the health occupations programs, constituting ten of the sixty credits required, and also in agriculture teacher education within the College of Agriculture.

Indiana University of Pennsylvania,
Indiana, Pennsylvania

Commitment to PBTE was evident at Indiana University of Pennsylvania even during the project's initial phase, especially from vocational education administrators and advisory committees in the university's fourteen-county service area.

With the help of a $52,900 center grant from the Pennsylvania Department of Education and an $8,500 grant for staff development, Temple University's PBTE program was replicated at Indiana University in August 1978. The program encompasses two levels of certification, each using thirty modules. An upper track program uses forty modules. A training program for field and school resource persons uses the modules being developed at Temple for resource persons. The program staff includes a program director, a senior teacher educator, four field resource persons, and twenty-two volunteers in local schools.

Approximately fifty-five teacher interns are currently enrolled in the Level I & II programs. The project began with fifteen students in September 1978, with plans to have ninety students by September 1980. To date one person has completed the course work and attained Level I certification.

Use of faculty from other departments to function as part of a diversified staff has resulted in increased utilization of the modules in these other departments (home economics, business education). The home economics department is contemplating beginning a project which will use modules to generate twenty-five credits.

University of Pittsburgh

This university is in the first year of a two-year project to develop a competency-based, field-based vocational inservice program which is currently being tested by twenty teachers.

Additional uses of performance-based materials. The four centers for vocational teacher education in Pennsylvania are branching into other areas of vocational education as a result of exposure to and use of the modules and requisite delivery systems. These programs are funded from P.L. 94-482, Subpart 3, Section 135, and include such areas as preparation of vocational education teachers in mainstreaming and competency-based methods of instruction in shorthand and typing.

Diverse Users

Telephone interviews were also conducted with representatives of small businesses, manufacturing companies, bookstores, professional associations, and other noneducational agencies which ordered PBTE modules.

Union Carbide Corporation,
South Charleston, West Virginia

PBTE modules are used by training departments in the corporation's fourteen chemical and plastics plants. The company's training consultant works with instructor/trainers who are primarily supervisory staff or experienced workers in a craft or operation area. The trainers use the modules to improve their instruction techniques, to assist them in training programs, and as general instructional resource materials. Trainers give new and experienced workers courses on equipment usage and plant procedures. According to the training consultant, "The modules were right along the line I was looking for."

Caterpillar Tractor Company,
Peoria, Illinois

The modules are part of an instructor's training program which is still in the development phase and being tested in three of ten company facilities. Although modules from the B, C, and D categories are ordered, usage is concentrated on the C modules dealing with the use of audiovisual materials. The modules are used as "survival kits" by those instructors who have no prior teaching experience.

These instructors are typically high school graduates or graduates of a two- or four-year company-sponsored apprenticeship program. Previously someone had to take time out from his/her own job to train an instructor "one-on-one." This resulted in loss of production time for two people. Now the modules can be given to new instructors, who can study them at their own pace.

The training director feels the "modules can stand alone" and provide "valuable how-to information at a cost we're willing to pay." He's recommending that modules be used in all ten facilities for training instructors.

APPENDIX B

SURVEY USED TO VALIDATE FINDINGS FROM THE CASE STUDY SITES

National Center PBTE Curricula
Use and Impact Information Sheet

Instructions: Please answer the questions in terms of use of the National Center's PBTE curricula. Respond only for programs for which you are directly responsible. Skip questions you do not have the information to answer.

Background

1. Your job title _____ 2. Agency _____
3. Department _____ 4. Location _____
5. Type of Agency: ☐ Secondary ☐ College/University ☐ Postsecondary ☐ Other _____

Use of PBTE Curricula

6. Type of program: ☐ Preservice Teacher Education ☐ Staff Development ☐ Inservice Teacher Education ☐ Other _____
7. Extent of Use: ☐ Primary program ☐ Supplement to other materials

For questions 8-13: If more than one program is offered, please respond for each type of program where applicable.

	Preservice	*Inservice*
8. Number of students currently enrolled in PBTE program	_____	_____
9. Number of full-time-equivalent staff	_____	_____
10. Number of PBTE modules used	_____	_____
11. Number of years required to obtain certification	_____	_____
12. Budger for PBTE Program component in 1979-80	_____	_____
13. Number of PBTE modules used in basic program	_____	_____

14. Vocational education service areas where PBTE modules are currently used: (check all that apply)
    - ☐ Trade & Industrial Ed.
    - ☐ Business & Office Ed.
    - ☐ Health Occupations Ed.
    - ☐ Distributive Ed.
    - ☐ Agriculture Ed.
    - ☐ Industrial Arts Ed.
    - ☐ Home Economics Ed.
    - ☐ Technical Ed.
    - ☐ _____

Effects of the PBTE Program

What has been the effect of PBTE on the following:

	Increased	No Effect	Decreased
15. Enrollment in vocational teacher education programs?	☐	☐	☐
16. Ability to serve people in your service area?	☐	☐	☐
17. Flexibility in getting help to new teachers/instructors when they are hired?	☐	☐	☐

	Increased	No Effect	Decreased
18. Per-student cost for certification?	☐	☐	☐
19. Standardization of the skills taught to vocational teachers/instructors?	☐	☐	☐
20. Retrenchment of teacher education faculty?	☐	☐	☐
21. Use of differentiated staffing?	☐	☐	☐
22. Use of a field-based delivery system?	☐	☐	☐
23. Accountability of vocational teacher education program?	☐	☐	☐
24. Personal contact between teachers and teacher educators?	☐	☐	☐
25. Teachers'/instructors' confidence in themselves as teachers?	☐	☐	☐
26. Teachers'/instructors' use of competency-based techniques with their own students?	☐	☐	☐
27. Teachers'/instructors' skills in developing objectives and lesson plans?	☐	☐	☐
28. Teachers'/instructors' skills in individualizing instruction?	☐	☐	☐
29. Teachers'/instructors' skills in organizing content into units of instruction?	☐	☐	☐
30. Teachers'/instructors' ability to be self-evaluative?	☐	☐	☐
31. Teachers'/instructors' skills in evaluating performance of their own students?	☐	☐	☐
32. Methods of school administrators to evaluate the performance of teachers?	☐	☐	☐
33. Access to inservice staff development opportunities?	☐	☐	☐
34. Amount of staff time spent evaluating students in PBTE programs.	☐	☐	☐

Please use this space for comments and clarification:

APPENDIX C

Resources Studies in Completing the Evaluation

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